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ABSTRACT

This review of the literature on educational radio covers reports on research from many areas of the world. Prepared as an internal report for the South African Broadcasting Corporation (SABC) and Educational Radio and Television (ERTV), it was intended to provide a basis for both fruitful discussions and more specific and practical local research. The topics reviewed are organized under seven major headings: (1) The Functions of Broadcasts (the potential of radio); (2) Ideas That We Can Implement (understanding radio, health education programs, pre-school children, learning to listen, and disabled children); (3) Educational Radio Formats (open broadcast, open broadcasts with print, radio campaigns, radio school, radio forum farms, the radio animation groups, radio-vision, and interactive radio); (4) Educational Radio Style (in holding children's attention, program presentation, learning materials, "interactive" radio, and humor); (5) Educational Radio Management (cost control, systematic instructional development, distributed learning, research design, formative evaluation, summative evaluation, research in ERTV and SABC, organization and utilization in SABC); (6) Educational Radio Target Audience (teenagers and young adults, children, the teacher's role in infant and primary schools, role of parents, the teacher/radio partnership, Radio Teacher Training Programme, and radio audience); and (7) Radio Classroom. Brief descriptions of several educational radio programs that were presented in a series from January to April 1974 are appended. (30 references) (CGD)

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EDUCATIONAL RADIO

WHAT THE RESEARCH SAYS

A Literature Survey

by

ALIZA DUBY

Internal Report

ERTV, South African Broadcasting Corporation

JOHANNESBURG, April 1988

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Preface

This report is more a cluster of relevant quotations than an article. The intention is that we, the ERTV staff will learn from them.

I see this literature survey as a tentative document, and hope that fruitful discussions will follow the submission of this report; that it will provide a basis for more specific and practical local research, i.e. South African Curriculum analysis, South African Target Audience research, research on listening habits, availability of the medium, cost analysis, formative evaluation,etc.

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ALIZA DUBY

EDUCATIONAL RADIO

WHAT THE RESEARCH SAYS

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The Function of Broadcasts

While the functions of radio, especially for open broadcasting, have seldom been clearly defined, at least five can be distinguished.

One is to motivate, encourage, and support students. Studies in Europe have suggested that broadcasting can significantly affect the proportion of correspondence students who keep working on their courses.

The second function is to teach students part of the curriculum. Radio may be used to reinforce ideas and information that are also carried in print or to present those parts of a subject that lend themselves to oral presentation. Where groups are learning without a teacher, the teaching function of radio becomes particularly important since we cannot be sure that all participants in forums, schools, or campaigns can read and write, or that printed materials will always reach them.

The third function of radio is to teach students techniques of study, as opposed to subject content. Radio can be used successfully, for example, to teach students how to solve problems in mathematics or how to plan an essay.

The fourth function is to inform students about their course and about activities associated with it.

Finally, radio can be used to respond to student problems. If recordings of students can be made or an analysis carried out of difficulties they have encountered in their written work, then this feedback can be used to improve radio programmes.

The Potential of Radio

The following is summarised from Jamison (1978) research report on the intensive use of radio in third world countries, where he proved that radio is the most efficient instructional medium.

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The lessons of many years and many countries, including Kenya and Nicaragua, (see also, Duby, 1988) confirmed the potential of radio for cost-effective formal education. These results are even more interesting when compared with available alternatives.

It seems worthwhile to ask whether radio should not be used more commonly as the primary instructional method in situations where scarce resources limit the effectiveness of more conventional pedagogic approaches.

The most common use of radio in language teaching has been to support other instructional strategies. This has been true in Kenya, where lower primary children have long benefitted from one fifteen-minute broadcast per week to support English lessons taught by classroom teachers with the Progressive Peak textbook series.

The most important question which the Radio Language Arts Project seeked to answer was whether a more intensive use of radio can be justified by improved pupil performance and reasonable, possibly reduced, costs. In comparison with other schools broadcasts in Kenya, the radio English lessons, are longer (thirty minutes instead of fifteen), are more frequent (new lessons daily instead of weekly), cover more of the school year (broadcasts thirty-nine out of forty weeks instead of twenty-four out of forty), and begin earlier (at the first year of primary school instead of the second). These children listen to 292.5 hours of radio English lessons, compared to the twelve hours of new radio instruction children in conventional classrooms receive in the same period.

This means that these children are exposed to instructional radio for learning English almost twenty-five times as long as their counterparts in control classrooms. With this much time available, it becomes possible to assign a leading pedagogic role to radio. Rather than just supplementing textbooks and teachers, the radio lessons can carry a large share of the instructional burden.

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The following is from Bates' book (1984)

1. Successful broadcasts are fun to watch or listen to. Bates points to "Sesame Street" and the British series "On the Move".

2. Successful broadcasts are expensive. The shows have to be done well, and good results cannot be attained cheaply. Poorly designed and poorly produced broadcasts have caused some people to doubt whether educational broadcasting has any learning value.

3. Successful broadcasts are integrated into broadcasting and education structures. Broadcasters and educators must both be involved; neither can rely on his/her own expertise.

4. Successful broadcasts have specific objectives built around a curriculum designed for a target audience.

5. Successful broadcasts use pretesting and formative evaluation. This is the area where assumptions are rigorously tested. Methods for an educational broadcast initially flow out of the wisdom, experience and judgment of collaborative educator/broadcaster team. It is these methods that are tested prior to and during the series. Having specific measurable objectives beforehand is the prerequisite for pretesting and formative evaluation.

6. Successful broadcasts are not received in isolation. That is, people do not learn much when they watch or listen alone. The excitement generated by an engaging programme is multiplied many fold by the presence and involvement of others. In a developing country classroom, the enthusiasm generated by a group provides learning support to each child - whose surroundings may otherwise offer very little reinforcement to educational ideals.

7. Successful broadcasts are well marketed. The target group is

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alerted to the broadcast, prepared for the broadcast, and disposed to receive the broadcast. Once the series starts the broadcasts themselves are the prime marketing mechanism, to hold and to attract a wider audience. In the formal education setting of developing countries, the crucial "marketing" is done among education officials and classroom teachers.

8. Successful broadcasts have maximum exposure. This means adequate air time at appropriate hours, lots of programmes, and some repetition.

To achieve excellence in educational broadcasting, the very best from broadcasting must combine with the very best from education. The link between broadcasting and education cannot be assumed, but can be achieved by a focus on results and a willingness to evaluate all assumptions, in terms of the desired results.(Bates, 1984)

The following are summarised from Hilbry Perreten's report in Muller J (Ed.) 1985:

When radio was being developed for use in education in the 1920s and 1930s, the comparative effects of teaching by radio and in the ordinary classroom were studied extensively, and most such research found no significant differences in the results of the two methods. Similar results were found in Trenaman's research on adult learning.

In short, Trenaman found, "the physiological means of perception is itself only of small importance in the communication of ideas; what counts is the situation in which communication occurs - the reading and listening habits of the respondent and the character of the subject matter in question." Given an environment conductive to learning, ample evidence shows, people can learn from radio.

* Some of the projects that are mentioned here and others are described in more detail in the chapter: "We can learn from other countries experience." (Duby, 1988)

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Moreover, little evidence suggests that they will learn less effectively, or more, from radio than from other media. According to the communication theory, if conflicting signals are sent simultaneously through different channels, the signals are likely to interfere with each other and learning suffers, so perhaps radio's power to concentrate attention compensates for its being limited to one channel of communication.

Nevertheless the reader will find in another place in this report that some researchers think that radio teaches best when it is linked to other media. Accordingly they strive to support ER with printed materials.

Ideas That We Can Implement

Understanding Radio

Socrates' idea was that the fundamental and most superior human quality is the ability to think. Thus he took upon himself to help humans to develop thinking skills. His educational medium was the argument so firstly he taught his scholars how to argue and how to use arguments to develop their thinking and enrich their thoughts.

Along the same lines, if we want to use radio as a teaching medium we should first learn and teach radio skills, namely on the one hand to produce meaningful sounds, voices, and music, and on the other hand to teach our audience to listen.

That means providing our potential listeners with a programme that will enable them to enquire, and to master listening skills such as the discrimination between voices and sounds, sounds and noises, silences and gaps in sounds, music from words, symbolic sounds and iconic sounds, etc.

Understanding Radio, another Aspect.

Together with other advantages of radio over other media, this programme will establish radio as meaningful and powerful educational medium.

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"To help children better understand and exert control over the use of narrative language, teachers need not only to devote time to children's literature, but also need to emphasize other narrative forms including the mass media and children's own stories (in their talk, writing, drawing, and play). Giving children experience in mass media techniques can play a key role in language education. They can write and publish a newspaper or magazine, or prepare a "radio" programme using a cassette recorder. In carrying out projects such as these, certain key concepts must be understood : (1) how to select material; (2) how to construct a media product; (3) the purposes of a media product; (4) how to represent ideas, people, and events; (5) how stereotypes allow communication to draw upon commonly held attitudes and beliefs (6) the inherently biased nature of a media product and (7) children's extensive, though unarticulated, knowledge of media conventions. (Wyatt, 1986)

"Children preparing a "radio" programme with a simple cassette recorder have to:

* research and gather information
* discuss what will be selected for inclusion
* develop a script or programme outline
* mark out information and interview segments, and choose music and sound effects
* time the programme
* record it
* edit it
* present it to an audience

The "composing" process becomes a production process. Every step in the production process involves decisions about what is and what is not to be included, as well as exactly how it will be used. All of these decisions will affect the meaning of the production. Decisions about the audience and the role of advertising will also significantly affect the final "look" or sound.

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The best way of getting children to become familiar with these steps and with the decision-making that goes with them, is to simulate the production process. Many schools do this when they ask their children to produce a school newspaper or a radio or TV programme. When children simulate a real production, they begin to learn about the conventions that go with it."

The above description is extracted from Wyatt's report (1986, Australia). He tried the idea with one school.

We can borrow the idea and develop a basic programme that will develop radio listening skills in our target audience by encouraging them to develop instructed radio programme. Such a basic programme will create better listeners, better learners, and more motivated ones.

Wiener (1985) reports on a very interesting project in this regard. "The East School News Service" in which junior/senior high school students were actually involved in producing news type of radio programme (dealing with school events, classes and special programmes).

During the programme development stages, a great deal of writing, reading, communicating, thinking and analysing, rewriting, rethinking, and rereading took place day after day. Students studied model articles, practiced their writing and broadcasting skills, taped and retaped their productions. They learned how to interview; to ask relevant questions, to listen and to think spontaneously, to explore answers, and to investigate issues. They learned and practiced critical, logical, and creative thinking, and they struggled with a variety of problems, and challenges all along the way.

The project represents a conception of teaching and learning and illustrates an approach to teaching that views the educational experience as multifaceted in purpose, method, and outcome. The project can also give use "food for thought" for example : should children be more actively involved in children's programmes, could

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teachers and students be more involved in the planning and production of educational programmes.

And to the question : "But did the students learn anything?"

I would have to answer as John Dewey did:-

> Learning? ... certainly, but living primarily and learning through and in relation to this living. (Dewey, 1899)

Health Educational Programmes

Some extracts from a recent evaluation report (Halliwell, 1987) about Radio health-educational programmes following the 1982 Radio Education Research Project in Jamaica are brought here.The goal was an evaluation of the feasibility and effectiveness of radio with printed support materials as a vehicle for the continuing education of primary rural health care workers in Jamaica.The research centred on ten 15-minute radio programmes transmitted weekly by the Jamaican Broadcasting Corporation between October and December 1982 and the findings are as follows:

- There were problems of delivery. Poor quality local radio reception in certain parts of the island, severly restricted listenership in these areas and appears to have been an important contributory factor to a substantial fall-off in listenership that occurred among participants. The last broadcast was given during the week before Christmas, for instance, and this may have affected listenership to that programme. The participants in general were quite enthusiastic about the course, but felt that although the programmes provided 'good' education they achieved only 'average' entertainment.

- The findings from a random sample of 500 persons used to assess the response of the general public would appear to discount the

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importance of low-level entertainment as a contributory fall-off factor. It could be that medical programmes - even if they have a serious educational format - are more suitable material for prime time listening than commercial broadcasting companies realise. For in contrast to the drop in listening among the participants, the general public following actually increased as time went by. Only seven per cent heard the first programme on (leg ulcers). This worked up to 42 per cent for the peak listenership (to the programme on diabetes) for an average over all the programmes of more than 20 per cent. There were many regular listeners (mostly female) and the number of regulars increased as time went by. Of those who listened, 55 per cent were purely 'impulse listeners' (i.e. they just happened to switch on and listen). Thirty-six per cent claimed to have heard one programme and then made an effort to listen to others. Eleven per cent had been told about it by others so they began to listen. It is therefore likely that the entertainment factor was not an important cause of fall-off among participants, and all the evidence about general public response would appear to reinforce a social argument that it should be taken into account as a spin-off benefit when policy decisions are taken in relation to different forms of distance education.

- The findings about effectiveness were of special importance. The print materials by themselves, or the radio programmes alone, were found to have learning significance at about the same level (P 0.005), but were not so effective as when they reinforced each other by being taken together (0.001)

- Clearly, at the 300 listeners level, printed materials had a decided cost advantage (and these were also preferred by most of the participants). However, if numbers had been increased, radio would have been more competitive quite quickly, and it was calculated that somewhere around the 600 level it would have begun to be cheaper.

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With regard to marketing, the materials produced for this course have been stored away, and could easily have been used against little extra cost as the basis for other distance education programmes. For example, media software libraries should be established.

The idea to broadcast Health Educational Programmes is worthwhile adopting. We have already tried it on Teletext and it works! (Duby, 1987)

PRE-SCHOOL CHILDREN

Programmes for the pre-school child seems to be a task of major importance to be tackled in the near future in S.A. because ;

a) There is no uniform formal education for pre-school children in S.A.(of all races) and

b) 45 % of the Black children fail at school in their first year.

Radio can enhance pre-school education in some ways by :

1. broadcasting specially planned programmes for pre-school children during the day
2. broadcasting supporting radio programmes for example by broadcasting radio programmes aimed at the parents of pre-school children to support TV programmes that are aimed at the children;
3. broadcasting programmes for the parents early in the morning or late in the evening to support the (radio) pre-school children's programmes.

Research on broadcasting for pre-school children supports this approach. The research says that although children are influenced by the broadcast programme, they are more influenced by the parents' behaviour and therefore it is important to educate the parents

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simultaniously; in this their behaviour will reinforce the message taught rather than sabotage it.

Another example is suggesting activities that parents can follow together with the children in order to reinforce the ETV message. (To do that one should add captions crowlling on the relevant ETV programme, using the special teletext terminal, or add a slide telling the parents when the radio programme would be transmitted).

Language Programme.

There is clear value, in a careful investigation of the potential of instructional radio, to carry the primary burden of teaching English as a foreign language in a cost-effective manner. Its advantages are numerous. Its record of service, in subject area, is an important one.

It's main advantage is that children are exposed to many hours of listening to good English, used in the English way and with the correct English accent.

Learning to listen

BBC producers (BBC,1977) came to the conclusion, after piloting experimental programmes, that the aims should be to teach children to listen through gaining their attention and interest, using the form of guessing-games with open-ended questions (eg. a siren could belong to a police car, fire-engine or ambulance: there is no exclusively 'right' answer), to familiarise young children with the conventions of radio drama, such as movement from narrative to scene and back to narrative, contrasts of 'young' and 'old' voices etc, and to provide a variety of sounds from everyday life, from the natural environment, and from musical instruments.

One important ingredient in the programme was the pause for children to reflect on and decide what sound they had heard. Children tend to give undivided attention to what is heard only four or five times.

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These were arranged in a pattern covering the first five programmes as the following figure shows.

Figure 1

SOUNDBOX

Prog. No.	1	2	3	4	5
	Opening of lid and 'Jumble' of sounds				
EFFECTS	Town sounds	Cock	Footsteps at different paces on crunchy leaves	Birdsong and animals	Countryside and cows, sheep, etc
	Different stones in pond	Cat Dog	tiptoe and hurry music	Identifying sounds in a crowd	Picking out sounds
VOICES	Male and female (solo)	Young and old (dialogue)	Good and evil	Animal voices: lion snake cow	Doubt and confidence
	size of people	Very old			Perspective, movement
SCENE	Different people throwing different stones in pond	Contrast of street and riverside scene	Chase (hurry music)	Talking while doing things (effort - eg when climbing)	Magic - shrinking sounds etc.
MUSIC	Magic music	River music	Travelling music	Procession	Country music

One important ingredient in the programme was the pause for children to reflect on and decide what sound they had heard

During the rest of the time they may appear to be entirely engrossed in other activities such as colouring in their pamphlet, filling in words or even model making.

Generally speaking it was found that those classes where the children appeared to be engrossed in such activities while listening, were the classes that had in fact absorbed all they had heard.

'given a listening time of twenty minutes, and a peaking-troughing pattern of attention during that time, it is possible to produce programmes that include four or five events or happenings that encapsulate the content of the programme, and link these events by short periods of relaxation or aural rests. These 'rests' can take the form of a passage of music, a montage of sound effects, a repeated

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refrain, or the comfortable security of the narrator's voice.'

While listening the children may look at the illustration in the pamphlet as a confirmation or assurance of what they have just heard. Older children can frequently look at the blackboard when one of the new or unusual words which the teacher has written on the board actually occurs in the programme.

During small group listening, the interaction between members of the group while listening can be significant. Where a group of nine children listened to a story, 'Sir Isumbras at the Ford' on transmission, seated around a table with the radio in the middle and sharing six pamphlets. The interplay between what was heard and the picture map on the page contributed immeasurably to the children's comprehension. This kind of interaction did not seem to diminish the group's ability to concentrate - each child's personal interpretation seemed to gain from such interjections. Interpolations of this kind from a class of thirty would become disruptive.

Disabled Children

If we are to produce a programme on this topic or for this target audience, we can learn from the mental Health Centre, Peshawar (Priston, 1986) report.

An abstract of this report to follow:

The document presents a series of 14 scripts focusing on families with disabled children, written in English for radio broadcast in translation to rural village areas in Pakistan. Intended to educate the public concerning disabilities and how families can help their handicapped children participate as fully as possible in community life, the format typically consists of an informal conversation between a rehabilitation counselor and parents, village leader, school headmaster, or disabled adult. Script titles are as follows: (1) "One in Ten Is Disabled," (2) "The mentally Retarded Child", (3)

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"People Who Have Fits",(4)"Physically Disabled Child (Following Polio)," (5) "The Blind Child," (6)" Blind Young Men," (7) "The Deaf Child: Diagnosis and General," (8) "Deaf Child" (Speech Development) (9) "Program for the Mentally Retarded Child, (10) "Children with Cerebral Palsy," (11) "Speech Problems and Behaviour Difficulties," (12) "Cause and Prevention of Disabilities," (13) "Going to School," and (14) "Round Up" (a summary of the concepts and information presented in previous broadcasts). Brief appendices present notes on script adaptation and presentation, as well as a viginette of the role of the rehabilitation specialist.

Educational Radio Formats

Open Broadcast

The advantages of open broadcasting are twofold: it is cheap, entailing only the costs of producing and transmitting programmes, and it reaches large audiences. The numbers reached by broadcasts are always much larger than the numbers who will enroll in a course or join a learning group. While the costs of broadcasts to schools are generally additional to normal operating costs, the costs per student may amount to no more than a small fraction of the amount spent on teachers or books; similarly, the cost for each adult listener, where no support services are provided, may be very low.

For vocational training or for equivalency programmes, open broadcasting has been used little, if at all. But, programmes intended for school audiences are also heard by large eavesdropping audiences. (Even programmes as specific as those on school mathematics in Nicaragua attracted an adult audience listening at home.)

With respect to many broadcasts, another set of difficulties arises when broadcasters adopt the wrong tone. Too often, listeners are told what they must do, when and how instead of being informed about new methods and the reasons for adopting them. Such didactic instruction makes production easy but listening difficult. In such cases, the listeners may not need instruction, which is likely to be either only too familiar or slightly wrong in the context of the micro-environ-

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ment, so much as they need explanation and information.

Open Broadcasts with Print

Because the lead times for printing pamphlets or books on the one hand, and producing radio programmes on the other, are likely to be different, the decision to link print and radio makes the production of radio programs more difficult.

In schools, print-supported radio programming has been used to enrich and extend the curriculum. It has made it possible for schools to offer subjects that would otherwise not be available to students. And it enables them to present subjects in a different way.

Other projects have used on radio and in print to carry a much heavier teaching load. In Mexico, a small experiment - Radio Primaria - used radio supported by print to extend the work of primary schools that could offer only the first few years of the curriculum. In Nicaragua, radio has been used in a much larger number of schools, to a much narrower purpose - teaching mathematics.

The use of print with radio has not only made it more convenient for teachers to use radio, it has also contributed to a shift in radio's function. Whereas it started as teacher support and classroom enrichment, with print support radio has increasingly been used to teach children direct, taking over some of the classroom teacher's functions.

Radio with print has not been used on any significant scale for vocational training. But it has been used for some equivalency courses. In Brazil, radio programmes help students prepare for the secondary-level equivalency examination, the madureze, and these programmes are supported by printed study material on sale at bookstalls. Similarly, in wealthy countries where public service broadcasting exists, radio with print support has been used extensively for adult education.

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Broadcasts with Print and Feedback.

Commonly, this kind of tutorial support has been provided through the

se of correspondence courses linked with radio. In particular, radio and correspondence have been used for the in-service training of teachers. In the late 1960s, Kenya started to use this combination to provide alternative training for unqualified teachers. More recently, Tanzania has adopted a similar technique to train the large number of teachers recruited to implement universal primary education.

Radio and correspondence have been more widely used in secondary and higher education. In many countries, primary education has expanded much further than secondary, so that demand for alternatives to regular secondary schooling is widespread. In South Korea, for example, the Air Correspondence High School has followed an earlier Japanese example and is using radio and correspondence for secondary courses. In Malawi, a comparable programme is offered : students come together in low-cost substitute schools, often with unqualified or underqualified teachers, and get most of their teaching from radio and print. At university level, a number of LDCs have established open universities, which use radio with other media in alternative education.

Even with arrangements for feedback, radio with print is of limited value for much rural education, since the audience is limited to literate individuals.

Broadcasts with Print for Groups.

For many adults, more support than radio or print alone can provide is needed. For them, some kind of out-of-school group organisation is necessary. The techniques of group study, supported by radio, have been used for programmes of vocational, equivalency, and rural education.(See also Duby 1988b)

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Open Broadcast (Muller, 1985)

There are numerous specific examples of how radio has been used to motivate people. Many of the Latin American church-related radio stations, have adopted the task of consciousness-raising among poor, rural audiences. White (1983) speaks of this in Honduras, and other researchers in the Dominican Republic and in Brazil. What seems to have happened over the past five years in most development work is that poor, rural people are being called upon to help themselves to change their situation. Whereas before many radio programmes stuck to literacy teaching as though learning to read and write were enough stimulus for adults to enroll, now people are being motivated much more specifically to help change their situation through common activity, and radio is helping to provide this.

The use of dramatisations, soap operas, and stories are all common forms of motivating people to become literate, to participate in a family planning programme, or to adopt an agricultural practice.

Two arguments advanced have backing from other evidence sources. First, the analogy with advertising calls upon the considerable evidence that advertising can use mass media to change the amount of knowledge, the attitude, and most importantly, the behaviour of an audience. No evidence is cited for the educational effectiveness of "advertising" but the argument that if soap or beer commercials work, then literacy or health commercials might also work, seems reasonable.

The second analogy in the Gunter and Theroux argument is the power of good entertainment to motivate and to teach.

An experimental project in Guatemala (AED, 1976) distinguished between organised and unorganised listening groups, and preliminary results indicate that open broadcasting had clearly superior results in comparison with controls, and showed even some relative advantages over the organised approach. What seems evident from examples like these or from Sesame Street is that educational programmes can have mass appeal, and that there is reason to believe that radio can

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attract a large listening audience in rural areas of developing countries if programming makes an appeal to audience interest.

A second example of this strategy comes closer to the Günter-Theroux example of "advertising." The Manoff advertising agency has been experimenting with short, radio spot announcements to help improve nutrition in low-income countries. The attempt is to create messages centered on one or a few specific behaviours and, with the use of reported and varied messages over a period of a year, to change listeners' knowledge, attitudes, and especially behaviour. The first project in Ecuador (Manoff, 1976) had a variety of problems, but showed a significant impact on the awareness, knowledge and attitudes of a large rural audience. Behaviour was more difficult to change, but in one practice, the use of iodized salt, behaviour did shift significantly over 15 months. Similar projects in the Philippines and Nicaragua are under way. Preliminary results in the Philippines indicate improvement in behaviour concerning nutritional practices. What seems important in this example is that brief radio spots can apparently change eating behaviour without an organised-audience context for persuasion. The messages are carefully made, the objective is specific and instruction simple, but the audience is volantary and listens at home. No materials are supplied and no backup from agencies is called for direct in the home.

A final argument of Günter and Theroux is that the open-broadcast approach reaches far greater audiences than do the organised-audience approaches. Good programming, it is maintained, will reach a much larger audience and have a relatively greater impact than the same amount of investment divided between programming and field supervision for an organised audience. There are two requisites for confirming this argument. First, in an open-broadcast approach it is necessary to assess the level of listenership and, with more difficulty, the amount of impact the programming is having.

The second question of impact has been measured thus far only in the case of the nutrition campaigns. The evidence indicates a positive

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impact on audience awareness, knowledge, and attitude. There is less evidence for behavioural change, but indications are that given the right objectives and conditions, simple behaviour can be changed. Emphasis on the quality of the message anc concern about its broad appeal are likely ways of improving the reach of the message.

Radio Campaigns

The second strategy, radio campaigns, is between the open-broadcast and the organised-listening-group approaches. It has a number of historical predecessors, including the organised discussion group in Sweden and the mass-mobilisation campaigns common to socialist countries such as the People's Republic of China and Cuba. There are few examples of campaigns in which radio has played a predominant role. The Tanzanian case to be outlined has made a unique contribution in combining radio and discussion in campaign format. Some of the distinguishing features of a radio campaign are the following: its concentration of effort into a relatively short period of time; its focus on the achievement of one or a few well-defined goals that have broad appeal; its efforts to motivate and involve a large portion of the population in its activities; the organisation of a listening audience during the campaign period; the long preparation for the campaign and the need of coordination of many institutions for its success; and the role of public support for the campaign goals. Other features make the campaign similar to other organised groups' strategies: radio's use for publicity of the activity, organised listening groups with trained leaders, printed supporting materials and regular programmes once or twice a week.

Four points are to be emphasised in this regard which we can learn from,

a. the campaign format;
b. the use of a pilot programme;
c. teaching political issues to rural populations;
d. using educational Radio to teach the volatile type of subjects;

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The project report points out three features of the radio campaign format.

(1) The series of radio programmes
(2) The printed materials (a text for literate participants, plus a manual for group leaders),
(3) The organised study group with a discussion leader.

There have since been refinements. A fifteen-minute introduction was added to the radio programme to provide music, poetry, and announcements relevant to the campaign and to allow a "gathering time" before the main programme began.

Greater participation in terms of total numbers has been achieved, but it is recognised that sometimes large discussion groups limit the active participation of members.

Two other important features of campaigns are noted. First, there is in addition to the actual campaign of about 12 weeks, a planning period where the relevant ministries define campaign objectives, prepare appropriate written and radio material, and launch an important publicity campaign (including radio and poster announcements). Second, the Institute of Adult Education must get the collaboration of various ministries and agencies for planning as well as for recruiting and training group leaders.

The following positive features have emerged in the campaigns: multi-institutional co-ordination has been achieved, but this could not have happened without the strong political backing from the central government the campaigns have enjoyed, and the increasingly long periods of careful preplanning (18 months lead time for the health campaign); the short period of the campaign seems to have achieved a high audience-retention rate; the impact of the campaigns has gone beyond the direct participants and has involved others in the actions advocated by the government. There are several problems to be faced in these campaigns: for example, the failure of the distribution of printed materials at times, the lack of feedback and follow-up mechanisms; and the lack of highly trained leaders who might, as subject matter experts, answer participants' questions immediately. The Tanzanian campaigns have demonstrated how radio can

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be integrated into wide-scale learning experiences that have a significant impact on rural areas.

The experience of Tanzania with campaigns is impressive. On both criteria of reach and impact. Hall and Dodds point to several particular advantages of the radio-campaign strategy: first, its power to mobilise such a large number of people; second, the discussion-learning method that does not have the teacher as information-giver of the group, but a local person simply trained to lead the discussion; third, the peculiar fit between the strategy and Tanzanian-defined development goals stressing mobilisation, popular participation, and a self-help approach to achieving them.

Implications: The campaign approach should be considered for application in our situations with subjects such as AIDS and Elections.

Nevertheless, as is indicated in the report the question is: Can we agree on national campaign goals and get the collaboration of a number of agencies in the planning and execution stages? Or should we work with a single Government agency? However, the format was proved to be a promising approach for using radio to achieve changes. (It was tried in Botswana as well)

Radio School

The radio school is a form of organised listening that originated in Colombia thirty years ago, and that has spread to many nations in Latin America. The radio schools began when the originator, a Catholic priest, began to broadcast religious and educational messages to his scattered parishioners. Gradually he began to send out written material and finally to pick and train a group leader or monitor to hand out support materials, answer a few questions, and be a feedback person from the group to the production center. As the system spread, the organisation became more complex but the essential group learning mechanism remained unchanged. The important element that distinguishes the radio schools from the other listening group strategies is its continual commitment to teaching literacy and

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non-formal education skills. We may distinguish most regular listening groups form the radio-campaign strategy because the former create and maintain their groups on a permanent basis, while most campaigns create only ad hoc groups for the brief duration of the campaign.

White (1983) undertook a long-term evaluation of ACPH (Popular Cultural Action of Honduras). Our summary comes from his findings.

He found that many students in radio schools had had one or more years of regular school and that this seemed to make more difference in literacy attainment than time spent in radio classes.

In health and agricultural knowledge and practice, White found the radio-school villages were higher on knowledge in both, but that only in health were they higher in practice as well, when compared with non radio-school villages. He believes the lack of success of ACHP in making a difference in farm practice was because knowledge without resource inputs does not help the farmer improve his life.

He also generalised that to be relevant and successful, adult education must be closely integrated with resource delivery and other, rural-development efforts.

A review of the radio schools (McAnany, 1975) more generally concluded: "The positive features of the radio school approach in Latin America for non-formal education are several. First, radio schools have historically always focused on the campesino audience in rural areas where learning needs are greatest. Second, several features of their approach fit in with important learning principles: the group-learning approach; multi-media instructional methods (radio, printed booklets, newspapers, and audio-visual aids) coordinated around learning objectives; supervision by a local person who can relate to and motivate the learning group. Third, the radio schools have been built up on an already existing and important structure in rural areas, the parish church. The priest is an important legitimising factor that has helped radio schools survive in the rural areas where the power structure is generally oppressive to campesinos. Fourth,

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the radio schools, by being mostly private and church sponsored, have been free of identification with the government and its policies.

In our South African situation the school as well as the church provides a moral centre and the venue.

Negative features: First, the heavy emphasis on literacy seems to be a misdirection of effort. There is much wider range of information/education concerning rural areas that may well need to precede literacy and may best be conveyed by radio and through the monitor of listening groups who presumably would be literate. Second, radio schools often do not involve themselves in community development, claiming to be strictly educational. The Freire critique of such a 'banking' kind of education would suggest that the education learned in radio schools be applied to real problems of campesinos. There is a tension here, of course, between attacking real social problems and remaining in business. The experience of MEB in Brazil suggest that careful consideration of consequences of social action is necessary. Third, until now the radio schools have remained relatively small and their impact on rural life limited. These results may be partly due to lack of proper financing, but may also come from poor planning and management of the existing projects. Fourth, there is some evidence, moreover, that even in rural areas the relatively better off are the most likely to benefit from such services. Finally, the major efforts of radio schools seem to be focused on the mass media messages without giving sufficient attention to feedback from rural groups in order to reflect their needs and interests in the messages.

Radio Forum Farms

It is possible to draw certain basic conclusions from the long history of radio farm forums. What seems common across these experiences is both the structure (radio, small organised group, group leader and secretary, discussion and group decisions) and the general results (usually an advantage in learning and action of group over individual listeners to radio programmes). There is no sufficient evidence to prove that forums are an effective strategy in

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every case, but that potentially the combination of interpersonal and mass communication can be effective, especially in increasing knowledge. What seems evident from the experiences in India, Benin, and Indonesia, where large field tests of forums were made, is that the problems associated with capitalising on this potential are formidable. Essentially, it is much easier to organise the radio message than the audience. In all three cases the eager recruitment of new groups was not sufficiently followed up with supervision and distribution of printed materials. Moreover, feedback often failed, and groups whose sole contact was the radio message itself often disappeared quickly after formation.

The settings in which some of the large-scale tests of farm forums were created suggest, perhaps, that the strategy was not sufficiently integrated into other rural-development processes. India expected the radio forums, without other supporting activities, to create change. Although still prevalent, this belief in the sufficiency of radio forums by themselves has been undermined by lack of significant change in most rural areas.

To date, the evidence is not overwhelming but perhaps encouraging. The potential reach is quite large as both the Indian and Indonesian projects show. In their expansive phases each had several thousand groups organised. Their relative failure at this point does not invalidate their potential for reaching large segments of rural people. The clearest evidence of impact is in learning. It seems clear that farmers exposed in groups to agricultural information can and do learn more than farmers who listen to radio by themselves, or those who do not listen at all. The Guatemalan Basic Village Education Experiment, however, showed some advantages for radio alone over the organised audience for rural areas that are overwhelmingly agricultural.

The radio Animation Groups

This strategy again is a form of organised listening groups. We wish to distinguish it from the other two organisations of groups

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discussed above. The technique of animation grew out of a French tradition of group dynamics that was applied to development projects in the early 1969's, especially in Africa. The classic animation approach had clearly distinct historical assumptions from both radio schools and farm forums. At least in theory, the animation approach stressed the participation of the community in defining its own problems, the non-directive nature of the social animator's role, the degree of awareness necessary for the community to recognise its problems, and the self-help nature of its development action. In practice, many of these elements are not emphasised in radio projects in Francophone countries, and many of the original goals of animation have been partly adopted by other listening-group strategies, thereby blurring the distinction.

The following table summarises the assessment of the four Radio strategies in achieving 6 goals.

Figure 2

Goals and Strategies of Radio for Development: Effectiveness and Reach

		Effectiveness in Reaching Stated Goal				
				To Teach (nonformal education)		
Radio Strategies	Reach	To Motivate	To Inform	Cognitive Skills	Work Skills	To Change Behavior
Open Broadcasting	High	4	5	1	1	2
Radio Campaigns	High	5	2	2	1	3
Listening Groups	Medium	4	3	3	2	4
Telecommunications (two-way radio)	Low	5	4	2	3	2

NOTE: A value of 1 in the table indicates low effectiveness; a value of 5 indicates high effectiveness.

(Muller 1983)

The overall conclusions are:

The more heavily organised strategies clearly have advantages in promoting more complex and long-term changes among their clients.

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- Changing behaviours can be best achieved by Radio listening groups.
- The more structured the system the less people are exposed to it.
- The function of an open broadcasting is to produce and transmit programmes, not to control the listening conditions and not to supply supporting materials. That is the function of radio for listening groups e.g. (School Radio)

Feedback to enhance skills and to change motivation is the business of the listening groups and two-way radio.

Little firm evidence suggests that one format has clear advantages over another. But what evidence there is does suggest that language is all-important - regardless of which format or medium is used. Beyond that, it has been demonstrated that the effectiveness of the straight talk or lecture has clear limits, especially for people who have had relatively little formal education. (IDCA, 1983)

Radio Vision

Hawkridge (1979) describes how the multi-media approach was employed in the Open University in London.

The university provides post-secondary education to a large number of adults (21 years and older) from a distance. The average student uses ten or more hours a week to study printed materials, and supplements this with at most 50 minutes of watching television and 30 minutes of listening to the radio. More usually, he or she uses 25 minutes three or four times a month for television, and 15 minutes twice a month for radio and cassettes.

At an early stage in course planning, when a team has received its allocation, detailed specification of what is to go into each broadcast proceeds, involving both BBC producers and OU staff. Production takes place at the BBC's Radio 3 network. National newspapers in some instances carry details of the broadcasts. Because the times allocated to this programme has been removed from peak times to very

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early or very late they started by setting up a tape-duplication service: students could write to them requesting a tape of a given broadcast, and a tape would be supplied free of charge. This service expanded rapidly. Indeed, the BBC is now turning to making tapes specifically for use in cassettes to be played in the home, rather than for broadcast on open circuit transmission. Course teams are finding that these tapes permit the use of different pedagogical techniques.

The advantages of using TV and Radio in the OU are:

- an increase in the students' sense of belonging to the University,
- help them to identify with the course team (as well as helping them to recognise at sight or sound some of the team's members), and,
- thus make the teaching more personal, in spite of the distances.

Television and radio reduce the time needed by students to master content, and they add to the pacing effect of print.

They attract and recruit new students to the University or to specific courses, and interest general viewers. And, like print, they help to establish the University's academic credibility, particularly when distinguished academics from other universities take part in the broadcasts.

Radio in the OU can provide aural experiences, such as music and poetry or drama. It can be used for recording and presenting for study the sounds of real-world situations, such as children talking at school, people in a noisy job, or a family crisis; these broadcasts may be aimed primarily at sharpening students' analytical skills or at evoking emotional responses, or both. In much the same way, dramatised situations can be recorded and studied.

Radio can present important people, such as decision-makers, revolutionaries, politicians, civil servants, and experts on all sorts of

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subjects. It can do so quickly and cheaply. It can, through editing, condense an argument, whether of the intellectual kind or a political one. It can present controversies and debates. On a more personal level, it can offer tutoring, with the teacher adopting a person-to-person style towards his students. Because it is cheap and quick to use, radio can serve as a noticeboard or feedback mechanism. Errors in teaching can be corrected, at least in some cases. Errors in learning can be dealt with by broadcasts that discuss what mistakes students commonly made on an assignment.

Information about changes, particularly last-minute ones, can be transmitted speedily to the student body - provided students are likely to be listening.

With the help of the BBC, ways were found to combine the analogic codes of radio with the digital and iconic codes of print, what the BBC calls radio-vision. Students are supplied with print materials that are for use when the radio programmes are on the air. Radio is used to reinforce or clarify concepts taught in print. For example, in a course on spectroscopy, the radio programme calls upon students to carry out calculations, and provides ten-second silences in which they can do so before continuing.

In a science course, the spread of Dutch elm disease across the countryside is discussed on radio while students look at diagrams and maps that illustrate the life cycle of the parasite and the vectors of the disease. In a technology course concerned with systems, a case-study of hospital use of a renal (kidney) treatment system combines radio and television, using two programmes in each medium, plus print. A course on instrumentation in science and technology provides students with a home experiment kit. Radio-vision is used to demonstrate the techniques, with the radio commentary pointing out the problems of doing the polishing and etching the right way.

It is easy to see that many of the radio broadcasts would be more valuable to students on tape. Tape can be started and stopped. Tape can be listened to in many different places, at times convenient to

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the student, repeatedly if necessary. Our studies show that most OU students listen to the radio while doing something else; this is no doubt partly habit, but it may also reflect the low status they give to radio. They value radio- or audio-vision more since it links with print.

Figure 2 Use of print, television and radio by 'open universities' in various countries.

	Print	Television	Radio
France:			
Centres de Telè-enseignment Universitaire	Yes	No	Yes
Tèlè-CNAM (Conservatoire National des Arts et Metiers)	Yes	Yes	No
Netherlands:			
Open University (planned)	Yes	Yes	Tapes?
TELEAC	Yes	Yes	Tapes
Poland:			
Television Polytechnic (now defunct)	Yes	Yes	No
Agricultural Television University	Yes	Yes	No
Spain:			
Unversidad Naciqnal de Educación a Distancia	Yes	No	No
Soviet Union:			
Polytechnical Correspondence Institutes	Yes	Yes	Tapes

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	Print	Television	Radio
West Germany:			
Bavarische Telekolleg	Yes	Yes	No
Deutsches Institut für Fernstudien	Yes	No	Tapes
Fernuniversität	Yes	No	Tapes
Canada:			
Athabasca University	Yes	Yes	Tapes
North Island College	Yes	Yes	Tapes
Télé-université	Yes	Yes	?
Mexico:			
Universidad Abierta	Yes	Yes	Tapes
Chicago TV College	Yes	Yes	No
Dallas Community Colleges	Yes	Yes	No
Empire State College/WNET	Yes	Yes	No
Miami-Dade Community College	Yes	Yes	No
University of Maryland Consortium	Yes	Yes	Tapes
University of Mid-America	Yes	Yes	Yes
(West) Coast community College	Yes	Yes	No
Venezuela:			
Universidad Nacional Abierta	Yes	Yes	No
Australia:			
Deakin University	Yes	No	Tapes
University of New England	Yes	No	Tapes

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	Print	Television	Radio
Japan: University of the Air (planned)	Yes	Yes	Yes
Iran: Free University of Iran	Yes	?	?
Israel: Everyman's University	Yes	Yes	Tapes
Pakistan: Allama Iqbal People's Open University	Yes	No	No
South Korea: Junior College of the Air and Correspondence	Yes	No	Yes
South-Africa: UNISA	Yes	No	Tapes

What stand out most clearly from the Table is that few of these open universities use radio, although about half use either radio or tapes, that all use print, and that only in the Americas do all those listed use television. It may be surprising to find that so few use radio, when the cost of radio is compared with that of television and when I recall that radio provides complete geographical coverage in most countries.

The multi-media approach obviously can be adapted to other formal-education situations, such as the classroom, radio programmes for distance learners etc.

"Interactive Radio" - Evaluation Findings of Three Projects.

- The RLAP has proven that the success of mathematics by radio can be transferred to other subject areas.

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- Students can and do learn primary-school subjects when taught by interactive radio. Often they learn more than students studying without radio lessons.

- Trained teachers and untrained classroom proctors can use radio lessons effectively with little training or special assistance.

- Interactive radio lessons are seen as useful by teachers and proctors and are used voluntarily, provided that the quality of radio reception is acceptable.

- The cost per student per year to deliver radio lessons - after curriculum-development work is completed - is modest since few supplementary learning materials are required.

- In a grade-one classroom comparison with textbook use,interactive radio has been shown to be significantly more effective in raising student achievement.

- These instructional principles work for other subjects, and in other cultural settings.

- Interactive radio lessons improve the achievement levels of slower students, as compared with the performance of similar students in non-radio classrooms.

- Another tentative finding is that students from rural schools show greater achievement gains than students from urban school, thus narrowing the gap that exists between the two groups.

These results are the most powerful demonstration to date that the instructional method used in these interactive radio programs is capable of providing effective instruction in basic skills, whether or not a trained teacher is present, and without significant investment in accessory instructional materials.

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To summarise, it may be generalised that:

- Children learn best when they participate actively in the learning process.

- Immediate reinforcement of responses enhances learning.

- Distributed practice is more effective than massed practice.

- Explanations and examples must be appropriate to the level of development of the student.

- Supplementary materials should be held to a minimum in order to reduce costs and to minimise delivery problems.

- Teacher training should be kept to a minimum so as to reduce costs.

- Teachers should not be required to spend more time in preparation than they would if not using radio lessons.

- Teachers, schools, and students should not be required to purchase more supplies than they would otherwise.

- Content of the lessons should not be threatening to the teachers.

- Content of non-broadcast activities should be well within the teaching abilities of the teachers.

- If possible, the lessons should be appropriate for use by adults and by children who cannot attend school, but who can listen to the broadcast lesson.

- Formative evaluation can validate teaching effectiveness.

- Primary school students need great amounts of practice to reinforce the basic learning process. Because the radio lessons are organised to use broadcast time effectively, it is possible

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to include much more practice and review than is usually done by the classroom teacher.

- Learning must take place in small increments. The teaching of each topic has to be well planned so that each step follows logically from the previous steps and there are no gaps that would lead students to make faulty generalisations.

- Materials must be tried out and the results observed in the classroom. Extensive classroom observation of BSPP programmes has guided the direction in which the programmes have been developed.

- Students learn best when instruction is related to everyday life.

Educational Radio Styles

Many educational programmes, for schoolchildren or for adults, do use a more interesting styles; discussions or drama. Interviews, discussions, or dramatisations are likely to be more appealing to listeners, and to be more effective.

A variant of the first style is the advertising spot. Following the example of commercial radio advertisers, numerous countries have experimented with repeated spot broadcasts. Such spots, which last for between 30 seconds and two minutes, are repeated so frequently that they are remembered as clearly as advertising jingles. In general, the most successful of these spots follow four rules:

1. The first sentence should contain no new or important information (listeners often fail to hear the first sentence of an announcement) but should attract attention (by means of an unusual or appealing voice, an interesting question, or an expression of emotion).

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2. Of the 60 seconds, no more than 40 seconds should be talk. The rest should be music, silence or sound effects.

3. The message or content of the spot should be 90 percent familiar information and 10 percent new (as in dialogue or drama).

4. The basic structure of a non-dramatised message is four-part: introductory sentence, background, bridge sentence, and new information.

Advertisers stand convinced of the effectiveness of the spot as a way of increasing sales, but its value for education is harder to substantiate.

First, many educators argue that education consists of far more than drumming repeated messages into listeners' heads. Second, the results of one experiment carried out by an advertising agency in the Philippines suggest that even with intensive advertising over a year, only a minority of listeners are persuaded to change their children's diet as recommended and that the costs of reaching each family are relatively high. This finding is consistent with theories of communication that suggest that human interaction, as well as the receipt of "messages," is important in getting people to adopt innovations.

Radio producers have tried to increase radio audience's involvement in three ways - directly (by inviting listeners to respond aloud during each programme), vicariously (by getting listeners to identify with the characters of a broadcast), and representatively (by enabling some proportion of the audience to take part in the programme).

Of these three methods for involving the audience, direct involvement is the rarest. Most broadcasters have felt that time is at a premium and have been reluctant to broadcast silence or background music while listeners solve a problem or shout out their answers. Yet, this

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technique has worked. In Nicaragua, children learning mathematics at school responded out loud to radio programmes.

In Honduras, students of the radio school Accion Cultural Popular Hondurena (ACPH) were given themes to discuss among themselves or with their group leader, while the radio played background music. In other radio schools, learners write answers to exercises in their workbooks during pauses in the radio lessons.

Vicarious involvement, the second approach, is much more common. Many programmes have been cast in dialogue form. Some stations feature two speakers, a man presenter and a woman presenter, who alternate in the role of student and teacher. Then too, programmes can be dramatised to personalise the issues and to enable listeners to identify with their radio protagonists. From simple drama has come the idea of the educational soap opera, in which the views of educators, agriculturalist, or community development workers are embedded in a serial. The Archers in Britain has been running for thirty years, with an episode every weekday. It offers information mainly, but not solely, on agriculture, and it still attracts and influences audiences. (Doctors were astonished recently by an exceptional demand for tetanus immunisations after one character in The Archers developed tetanus.) The strength of the format is clear. The problem often lies in finding enough scriptwriters and enough ideas to keep going day after day or week after week.

Various techniques have been used to involve representatives of the audience in programmes. One is using recordings of students as the basis for programmes. In Ecuador, for example:

Members of the radio schools of "Radio Mensaje" regularly make their own programmes, which expose the issues that matter to listeners and reflect their local culture. These programmes were experimental at first, but quickly became so popular that more air time was given to them. Programmes are made from material recorded in villages and edited at the radio station.

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Request programmes of various kinds have also been used with some success. In Botswana, for example, a radio series called Re Botseng (Ask us) was launched as a successor to the 1976 radio learning campaign, and soon started receiving a steady flow of inquiries about the work of all government departments. Music request programmes have also been run by educators in an attempt to associate their subject matter with the popularity of the music they play.

Finally, representative listeners can be involved in an educational quiz show; The attention of the listeners is retained both by natural interest in a competition and by auditory stimulation through the use of buzzers and bells for right and wrong answers, recorded applause to create a feeling of immediacy, and so on ...

The quiz show can transmit concrete facts, especially on subjects with which the audience already has some familiarity. (James Therous, Techniques for Improving Educational Radio Programmes)

In Holding Children's Attention

Passivity, in turn, will quickly lead to a loss of attention, and loss of learning. Since the radio has no immediate means to detect this, the goal must be to avoid it altogether.

The S&T/ED model already provides a number of strategies for holding children's interest; strategies so successful in practice that they have succeeded in maintaining high attention levels, even among entering first graders, over a full half-hour broadcast - something that most radio experts predicted could not be done. These strategies include

- varied content in each lesson, because of distributed learning;
- varied pedagogic approaches, ranging from formal didacticism to informal instruction delivered in an entertaining manner;
- interactive lessons with frequent student responses;
- enhancement segments with no primary instructional objectives other than to provide a change of pace through songs, games or physical activities;

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than to provide a change of pace through songs, games or physical activities.

Programme Presentation

Children are reassured by the known friendly voice, which is clear, does not appear to be talking down, and gives an impression of understanding them. Regional accents are always a problem; they are appreciated by children in the region but other children may not understand them. They represent people who are distant and different. Familiarity is important and there appears to be a difference in response by children and teachers who hear the same presenter each week from a broadcast live or recorded, and by those listening occasionally to a tape recording.

Music, radiophonic sounds, and recorded sound effects have an essential place in building up the atmosphere that will satisfy the child's anticipation of pleasure and emotional involvement. Long stretches of one voice can be disastrous in making children switch off unless the speaker is a gifted story teller who can himself provide a range of voices and sounds. The difficulty with narration arises when it is used to convey abstractions that the child is unable to comprehend. It can be that as few as two or three short, but incomprehensible, utterances will destroy the child's attention. The child is no longer 'in the broadcast'; the incomprehensibility has pushed him out. This may produce within him a state of 'aural tension' when the mind is continuing to sort out what has just been heard, or misheard, and at the same time is trying to listen to what is currently being transmitted. A discerning classroom observer may notice signs of panic on the faces of children when the sound quality deteriorates so that voices and effects become muddled and the children realise they are failing to understand and possibly have in mind the post-broadcast cross-examination by the teacher on what they have learned from listening to the programme.

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If attention is directed to a picture in the pamphlet, the 'message' of the picture has to be clear and the sound communication has to direct attention to the 'message' and reinforce it.

This is a basic concept underlying the selection of pictures and scripting of radiovision programmes for which the school has a film-strip purchased in advance from BBC Publications, and a recording of the programme the school has taped. At worst a radiovision picture may have a miscellaneous collection of information to which the recorded sound does not give the listener and viewer the appropriate sequence of verbal clues to enable him to distinguish quickly the significant from the insignificant elements, the foreground from the background.

Incidentally, humor is important in school radio although it is often eschewed by writers and producers. They are wary of it, and rightly so in some instances. Unexpected comedy can be inappropriate at the beginning because it may divert attention from the main substance of the programme. Pre-transmission testing with children helps in indicating possible listener reactions; comedy lines, humorous situations, and jokes may be better placed at the middle or towards the end of the programme where they could revitalise flagging attention, or summarise a main teaching point in a memorable laughter line.

Do children like hearing other children in broadcasts? Yes, if the children are used sparingly and act as intermediaries between the adult participants in the programme and their own peers among the listeners. Children as interviewers do seem able to ask discerning questions, which go to the heart of the matter, and adults in response usually drop the cliches and vague abstractions, explaining or describing in clear, straightforward terms which are readily understood. It is difficult to talk down to children when answering an unexpectedly direct question that requires complete understanding by the interviewee, and the mere presence of the child is a reminder to the adult to make no concessions for previous knowledge, and also to express thoughts in the most exact, least complicated fashion,

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whenever possible using images and analogies likely to be known to children of comparable age.

Learning Materials

We can also learn from a research conducted for the Victoria Country Education project, USA, 1986. The research was to determine why particular learning aids are chosen or preferred over others.

Some of the findings are quoted here: Audio cassettes were more likely to be used for learning by young children (26 percent of 2-5 year olds, 19 percent of 6-11 year olds) than by teenage children (13 percent) or adults (15 percent). On the other hand, radio programmes were more frequently cited by adults (20 percent) and teenagers (18 percent) than by 6-11 year olds (14 percent) or 2-5 year old children (10 percent).

Although both of these audio technologies were used by considerably smaller percentages of learners in all age groups, each group found substantially higher usage for intellectual than for practical/recreational learning activities. Radio programme usage did not differ by type of learning activity for any of the three children's age groups; however, the percentage of adults using radio programs in intellectual learning activities was more than twice the percentage using such programs for practical/recreational learning.

'Print only' users were the most likely to have chosen art, whereas religion was the most frequently named subject among print and audio users.

With regard to the use of video and audio resource materials, no consistent significant differences emerged between the various learning style preferences examined.

"Interactive" Radio

The following is a summary of the school radio format, written by Esta de Fossard (in De Fossard, 1983) following the trial of RLAP in Kenya.

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Frequent Responses. A primary lesson of the previous S&T/ED-sponsored radio projects shows that the involvement of students in the learning process through interactive learning is perhaps the single most important method for achieving the instructional goals of radio. The first key to success in this area is engaging in Children's Interest. To capture the children's interest the radio programmes should be entertaining as well as educational. This is particularly important for media-based instructional system. As noted previously, radio can encourage passivity if lessons are not carefully designed.

The instructional objectives for the RADIO Project's first lessons must take this into account. Children learn to respond directly to commands and questions from the radio characters during carefully timed pauses in the broadcasts. Because those characters, in turn, seem to reply to the children, a sense of two-way communication can be created. By the second year of broadcasts, this sense becomes a strong foundation for the instructional message.

Once this two-way relationship is established, it is possible for the radio to stimulate pupil participation effectively. Writers must let as little time as possible go by before requiring some sort of response from the children, the exact type of which will depend on the specific instructional objective being treated. In Radio Math and Radio Language Arts this was measured in seconds, with intervals greater than 30 seconds generally considered too long.

Immediate Feedback. Another lesson gleaned from S&T/Ed is that learning is enhanced by immediate feedback to the learner. This is also an area in which the one-way nature of broadcast media can cause problems unless appropriate care is taken. The Radio Project lessons are designed to serve teachers who may be weak in the context area,

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as well as those who have good training and experience. Each segment, therefore, must be planned so that the students benefit from everything that the classroom teacher can contribute, but do not suffer if this contribution is limited. For this reason, too, the radio must give pupils correct answers to problems as often as possible.

Providing immediate feedback is one of the more interesting challenges of the Radio Projects. When the technique was first developed in Nicaragua with Radio maths, it was fairly straightforward; most maths problems in lower primary school have only one correct answer. The radio has but to ask a question, pause for the proper number of seconds, and give the appropriate answer. Even when a problem-solving process is being taught, there is likely to be only one correct way of analysing the problem and arriving at the intended solution.

Radio Language Arts broke new ground in this regard. The open-ended nature of language made immediate reinforcement far more difficult to implement for English than for mathematics. If a child is asked a comprehension question, one correct answer can be modelled. If he or she is asked to generate language naturally, however, there may be a multitude of correct responses. The radio cannot model them all. If a child is asked to write a response, the radio itself has no way of directly judging or correcting that written response.

Children learn better when they are actively involved in the learning process. Radio, as a one-way broadcast medium, tends to encourage passivity among listeners unless careful steps are taken to promote active response. This is a central instructional design principle of the Radio Language Arts Project. (See also Duby, 1982)

The first key to success in this area is getting children to accept the radio as a window into another world, who's characters can communicate with the pupils in the classroom. The primary instructional objectives of the first standard one lessons centered around on this task. Children learned to respond directly to commands and questions from the radio characters during carefully timed pauses in the

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broadcasts. Because those characters, in turn, seemed to reply to the children, a sense of two-way communication was created. By standard two this sense has become a strong foundation for the instructional message. With no hint of self-consciousness, pupils ask and answer questions of the radio characters, sing songs with them, play games with them, and travel with them in the realm of imagination to a variety of locales where functional English can be acquired and practiced.

Once this two-way relationship is established, it is possible for the radio to effectively stimulate pupil participation. Writers try not to let more than fifteen to twenty seconds elapse (sometimes more, often less) without requiring some sort of response from the children. The exact type of response depends on the instructional objectives being treated. For example, on the instructional objectives being treated. For example, pupils could be asked to answer a question, ask a question, repeat a pattern, work through a transformation drill, read a sentence, find a word, write a phrase from dictation, copy a sentence from the blackboard, sing a song, or play a short game requiring physical activity.

All of these techniques, and many others, involve children actively in each radio lesson. In this manner, the children's attention is held firmly, they are better able to acquire new skills, and they are likely to retain those skills more successfully. One result is that teachers and headmasters frequently comment on how much the children enjoy and are interested in the English in Action lessons.

Immediate Reinforcement.

This is also an area where the <u>one-way nature</u> of broadcast media can cause problems unless appropriate care is taken.

For example, the radio Language Arts Project lessons are designed to serve teachers who may be weak in English, as well as those with good English skills.

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Therefore, each segment is planned so that the pupils will benefit from everything that the classroom teacher can contribute, but will not suffer if this contribution is limited. For this reason, the radio gives pupils correct answers to problems as often as possible.

The open-ended nature of language makes this far more difficult to implement for English than, for example, mathematics. In the case of reading exercises, the problems are minimal. If the child has been asked to read something, the radio can repeat it correctly. If a comprehension question has been asked, the radio can model an appropriate answer. In the case of writing, on the other hand, it is very difficult for the radio to provide effective reinforcement. The pupil's attention can be drawn to a model of the correct response, but his or her actual written work can neither be judged nor corrected by the radio. This remains the teacher's responsibility.

Oral language falls between these two poles. In the first year of broadcasts it was fairly simple to anticipate the correct response to a question, since the language available was relatively limited. However, as the children's English ability increases, so does the difficulty of reinforcing correct responses. For example, there can be several good answers to the question, "Where is Juma's book?" Appropriate responses include "It is on the table," "It's on the table" "On the table," "It's over there," etc. Fortunately, classroom observations suggest that the pupils are not confused by hearing the radio offer one correct answer after they have given a different one.

Humor

The relationship of five demographic variables to five types of humor was tested by Zane (1987)

Results indicated that liking of the announcer's style of delivery was a highly significant contributor to appreciation of each of the humor types. Age was significant in humor with a sexual ethnic or

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alcohol theme. Gender was significant in ethnic humor only. The research shows that appreciation of humor can be partially explained by selected demographics.

Gelb and Zinkhan (1986) researched the effectiveness of using humor in radio commercials:

The findings indicated that adding humor to a conventional hierarchy-of-effects mode does not improve the model's overall explanatory power. However, humor was found to be negatively related to recall and was positively related to attitude; both relationships were predicted, based on literature in this area.

Educational Radio Management

Cost Control

The inherent costs of developing and broadcasting radio lessons have already been mentioned. It is important to ensure that no additional costs are unnecessarily associated with the methodology if the total package is to remain economical. Futhermore, special projects such as the RLAP too often depend on resources (human and time, as well as material) which cannot be supported by normal operating budgets. In such cases, of course, no matter how impressive the results, the new methodologies can never be properly implemented.

The Kenya Language Programme seeks to meet this challenge by minimising two particularly significant costs: printed materials and teacher training. Recognising the expense, difficulties, and uncertainties associated with printing and distributing materials, the RLAP depends as little as possible on the print medium. A brief guide to each lesson is prepared for the teacher. These can eventually be collected in a simple booklet which can be distributed separately or with other teacher's notes for other school broadcasts.

Language teaching, of course, benefits substantially from visual perception. Whenever possible, the English in Action lessons ask the teacher to write or draw on the blackboard, prepare simple visual aids, or locate easily obtainable props. Few assumptions are made

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about textbook availability, although recommendations are given for how teachers should take advantage of those English textbooks that the school can supply.

In standard two, for example, teachers are given guidelines for using the Progressive Peak books during non-radio English periods, but the radio English lessons themselves do not depend on these books. Instead, pupil worksheets are prepared as necessary to accompany the radio lessons. These use type-written text and simple, black-and-white line drawings, primarily to support reading work. During the project's pilot phase the worksheets are being continuously developed in conjunction with the lesson scripts and distributed (with the teacher's notes) to project schools every fortnight. For national implementation, however, the worksheets can be compiled as inexpensive booklets that would be less costly to print than conventional textbooks.

Formal teacher training has been limited to a one-day workshop at the beginning of the year. The workshop introduces teachers to the radio and the lessons, and explains how they can work effectively with this method. Many teachers have asked for longer training, but the costs would preclude national implementation of such a programme. Instead, the radio lessons themselves are designed to give the teacher as much guidance and help as possible. The radio characters frequently give the teacher suggestions and request his or her help in various ways. The teacher's notes for each lesson also suggest the most effective ways to work with the radio. There is even the possibility of developing a radio-based in-service training programme which could reduce or even eliminate the need for an initial workshop.

Systematic Instructional Development

The Radio Language Arts Project integrates two appropriate educational technologies. The first, radio, has already been explored in some depth in this paper. The second is a technology in the original

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sense of the word (which comes from the Greek tekhnologia for 'systematic treatment'). It is systematic instructional development.

The RLAP is not a curriculum development project in the strict sense. It does not seek to determine what should be taught, since it follows the guidelines in the Kenyan Primary English Syllabus. Instead, it seeks to determine how the existing curriculum can best be taught with the help of radio in order to accomplish this, the syllabus must be translated into effective instruction which systematically imparts to pupils the objectives specified by the curriculum. This is the process of instructional development.

The process begins with the writing of a 'Scheme of Work', which translates the syllabus into a step by step sequence of language competencies, patterns, and vocabulary. Each step (called a 'frame') focuses on the four basic skill areas (listening, speaking, reading and writing), identifies links to existing material (such as the Progressive Peak readers) for possible follow-up use, and suggests a theme that can unify the lessons (for example, 'at the shops'). Frames are designed and ordered following the best available principles of language teaching.

Each frame is translated into a series of lesson plans that guide the script-writing. The lessons are divided into segments, ranging in length from thirty seconds to several minutes. Multiple segments, in turn, are combined into instructional blocks, each assigned to a specific skill area. The organisation of the lessons is constant. In standard two, for example, every lesson begins with a speaking/listening block that runs for six minutes following the musical opening and cencentrates on maintenance of previously taught patterns and vocabulary. The content of each segment varies form day to day, as specified in relation to the frame by the script plan.

The instructional writers draft segments by following the script plans. They refer to the relevant frame in the Scheme of Work for the content and objectives that the segment must teach. The draft

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segments are then combined into a working script, which is reviewed for congruence with the specifications in the Scheme of Work for cultural appropriateness, and for production suitability.

Once the script has been approved, support materials (teacher's notes and pupil worksheets) are written and distributed to project classrooms.

Formative evaluation instruments (discussed later in more detail) are prepared in order to check on whether the part of the curriculum under consideration was, in fact, mastered by the pupils. Formative evaluation results feed back into the script planning process, closing the loop. The entire process is designed to promote effective learning, with maximum efficiency of precisely what is required by the syllabus.

Distributed Learning

Psychologists have long known that skills need to be practiced regularly to be maintained effectively, and that learning spread over time (distributed learning) is more effective than learning concentrated in only one period (mass learning). (Underwood, 1961) However, instructional designers generally have paid only lip service to the implications of this principle. By far the most common mode of instructional organisation, whether by classroom teachers or mediated learning packages, is the 'topic' - one lesson devoted to one subject.

The challenge of instructional efficiency addressed by the Radio Language Arts Project requires the application in practice of the distributed learning principle. This is one reason for the segmented script organisation described in the previous section. Rather than devoting one English in Action programme to a single topic or objective, each programme consist of several segments teaching or maintaining different skills and competencies. A given competency, on the other hand, will be taught over several consecutive lessons.

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Then, after a period of several weeks, it will be maintained over several more lessons.

Distributed learning introduces the important element of redundancy into the radio lessons. In a more traditional curriculum organisation, one broadcast might be devoted exclusively to one topic. What happens if a child misses that broadcast because of sickness or broadcast problems? A classroom teacher would know that this had happened and could take steps to individualise the instruction, perhaps doing extra work with the absent child to cover the missed content. The radio lesson designers, however, will not know as the script is being written that any given child will miss the broadcast, nor could they respond effectively if they did know.

The S&T model of segmented lessons and distributed learning, on the other hand, assumes that only one portion of the instruction for a given area will be covered in a given lesson, and that portion will be reviewed in future lessons. The Nicaraguan and Kenyan projects proved that a child who misses a particular broadcast will be able to cope far more easily in this system.

In addition to promising to improve learning, this approach enhances the ability of the radio lessons to involve pupils. The relatively short attention span of lower primary children is much better served by only a few minutes of concentration on one topic. Their interest can be maintained more effectively through the presentation of a variety of material and through the quicker pace such variety promotes.

Research Design

The Radio Language Arts Project's research design gives equal weight to two discrete strategies, one for formative evaluation, the other for summative evaluation.

This balance attempts to redress problems common to the research designs of other instructional radio projects. On the one hand, some

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projects have had little or no formative evaluation, making it difficult to correct weaknesses that remain unidentified until the final, summative evaluation (when it may be too late to do anything about them). On the other hand, many projects have had no effective summative evaluation at all, making it difficult to document and analyse lessons learned with any confidence.

The RLAP research design uses a sample of thirty-one schools drawn from seven Kenyan districts. In light of the mission to reach rural children, these schools were chosen to represent Kenya's rural population, limited only by the necessity of project staff's being able to reach the schools for educational treatment and evaluation. Finite resources also precluded working everywhere in the nation. Given the obvious importance of mother tongue as a variable in learning English as a foreign language, districts that represent approximately seventy percent of the Kenyan population linguistically were selected. Given the importance of academic quality, schools were chosen by means of a stratified random sample on the basis of performance on the standarised primary school leaving examination, which ensured equal attention being paid to high, medium and low scoring schools.

These thirty-one project schools are divided into two sub-sets. For summative evaluation purposes, twenty-one schools are designated as pilot (i.e., experimental) schools. Pilot schools are visited only once a year by professional staff, for the sake of post-testing, and once a fortnight by a driver to deliver and collect print materials.

This minimises the possibility of any Hawthorne effect artificially improving results.

For formative evaluation purposes, the remaining ten schools (matched on the basis of academic performance to ten of the pilot schools) are designated as observation schools. Formative evaluation data is collected from these schools several times each week. Because of the resulting intervention effects, observation schools are excluded from the summative evaluation sample.

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Formative Evaluation

Not only has the RLAP given equal weight to formative and summative evaluation, but it also has applied a technique developed by the Radio Mathematics Project which makes formative evaluation an integral part of the instructional development process.

Conventional instructional development, particularly for educational media, follows a four-step procedure. Materials are developed, tried out in the field, revised on the basis of field test results, and, finally, fully implemented. This can be termed the revision model. It is a thorough, well-validated methodology, but it is also expensive and time-consuming. If one wishes to develop a new radio lesson for virtually every day of the school year while minimising costs at the same time, the revision model is impractical.

Radio Mathematics developed an alternative formative evaluation model based on the feedback system used in industry to control continuous processes.

Industrial applications of this approach involve the continuous monitoring of output, with any deviation from desired outcomes causing an automatic compensatory adjustment of the input parameters. Its educational application calls for the ongoing assessment of lesson effectiveness, with corrections being made (i.e. material being retaught) in future lessons as necessary.

As applied in the RLAP, this model is labelled the feedforward revision system to underscore its emphasis on improving instruction through changes to future lessons. A team of two (on a part-time basis) is assigned to each of the ten observation schools. They observe three lessons each week, completing a protocol developed by project staff which focuses attention on the instructional methodology (teacher performance, pupil participation, common mistakes, etc). They also talk to teachers, eliciting their comments and suggestions. To these reports are added observations by the RLAP professional staff members, each of whom observes once a week. Every

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Friday the observers administer an achievement test, also developed by project staff, which focuses on objectives that have been introduced or maintained during the week.

Formative evaluation data is compiled, analysed, and summarised by the RLAP research specialist, who then presents the results to his colleagues. Problems are identified and decisions are made about correcting them. In some cases a specific problem (for example, an objective that was not mastered) will be solved by writing a limited number of segments to correct it (i.e., the objective will be taught again using a different instructional methodology).

In other cases a general concern will be raised (for example, children have difficulty locating a specified section on worksheets), resulting in a new instructional design principle which will be applied throughout future lessons (perhaps a new worksheet format, and/or more time and clues given in the radio lesson to help children find the proper place).

When serious problems arise, of course, decisions are made to change lessons that have already been recorded. A segment which is observed to fail completely, leaving pupils confused and not participating, would evoke such a decision. But the emphasis of the feedforward formative evaluation process is on revisions of future materials. This requires that the instructional design principles on which materials are based be carefully validated to ensure that problems are the exception rather than the rule.

Before regular broadcasts began, the RLAP spent more than a year developing pilot radio lessons based on tentative principles about the most effective use of radio for teaching English as a foreign language, testing those lessons in classrooms, evaluating the results, revising the design principles, developing new lessons based on the revised principles, and so on. The result was a reasonable certainty that the English in Action lessons would be generally successful without an unacceptably high level of revision. In practice, this has proved to be the case. The radio lessons work

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well, and those problems identified by formative evaluation have been corrected without undue difficulty.

White (1983) identifies some Formative activities as follows:

Action research carried out by the staff on a continuing basis (participant field observations to get a sense of problems, direct contact with the living conditions of beneficiaries to detect needs, etc) mainly to ensure that the language of broadcasts is that of the people, that content bears some relation to the people's interests, etc.

Continuous evaluation carried out by the staff (systematic collection of essential statistics on results, analysis of methods used by field teachers, and inventory of interests, aspirations and needs of beneficiaries, etc) in order to know the progress of the programme, the degree to which goals have been accomplished and the need for adjusting long-range objectives.

Scientific (controlled) educational evaluation carried out by external evaluators and the staff in order to test whether new methods are achieving the desired results, determining whether the educational achievements are really the results of these methods or other factors and, if possible, a comparison of the effectiveness of these methods with alternatives.

Sociocultural-educational research carried out by competent social scientists and educators to analyse the structural and individual factors influencing the present process of social development in the country and to get long-range objectives of social development for the radio school.

Summative Evaluation

The basic choice for the summative evaluation design was between matching control and experimental schools, administering a post-test in both sets of schools simultaneously at the end of each broadcast

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year, and using the same set of schools for both control and experimental purposes, administering a post-test one year to children who have not been exposed to the treatment and the next year to children in the same classroom who have been exposed to the treatment. The second, lapped-year, research design was chosen.

This approach has two major advantages. The paucity of reliable data on school, teacher and pupil quality make any attempt to construct a comparable set of control and experimental schools an uncertain one. By controlling the teacher variable as much as possible (i.e. by trying to keep the same teacher in the classroom for both the control and experimental groups) and by guarding against any untoward changes in the pupil cohort from one year to the next (for example, by avoiding schools in areas where significant changes in the socio-economic and educational profiles of entering pupils are likely), the lapped-year design should ensure a closer match between control and experimental groups at the same schools than would be the case if two different sets of schools were used.

Second, the lapped-year design completely avoids the problem of contamination of control schools. Control groups are tested before the broadcasts to their standard begin, so there is no chance that they could be exposed to the treatment unintentionally. Were a matched set of control and experimental schools is used, it is possible that children in the control schools might listen to the radio lessons, too, thereby contaminating the results.

Other methods of evaluating the project are also being used. For example, questionnaires distributed to teachers and headmasters at the end of each broadcast year measure attitudes towards the radio method on the part of school staff. Information about each school (such as repeater and drop-out rates) is being gathered for future analysis.

Finally, a cost-effectiveness analysis will be undertaken to consider at least two interrelated areas. First, the costs of delivering

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radio-based English instruction will be compared to the costs of delivering conventional instruction. In Kenya, this conventional instruction is at present print-oriented, with a common text and supplementary materials for each standard, including brief, supplementary radio broadcasts beginning in standard two. Second, the costs of radio-based instruction will be compared to pupil performance, which could be studied in relation to student retention at the standard level, poor achievement, drop-out rates, and budget levels.

White (1983) concluded from his radio research in Latin America regarding research and evaluation the following:

Radio schools have a special need for constant research because there are no existing models for planning objectives, educational methods (especially the adaptation of instruction to the radio medium), curriculum design as well as training and administration of personnel. Most radio school systems at least intend their programmes to be linked to a process of development and social change so that it is necessary to have a fairly clear analysis of the path of development in their respective countries and how their specific educational action contributes to this. Also, since the radio school philosophy insists that their beneficiaries participate not only in the general educational policy formulation but even in the development of curriculum and methods, it is necessary to design mechanisms for participation.

One finds administrators looking for efficient ways to sound out what beneficiaries seem to want, to translate these general desires into a coherent educational plan and to enable beneficiaries to evaluate the progress of the programmes. Finally, radio schools have a policy of responding to the needs of marginal groups that other institutions have given up on or don't know how to reach. Leaders in the radio schools are often just as unsure as other educators about what they are doing, and they look to evaluation and research for some feedback and guidance.

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They are also insisting that before any evaluation or research is carried out by external agencies, this must be thoroughly discussed not only by administrators but by the staff and representative beneficiaries in order to have some input into the research design and determine how the research can serve the internal needs.

Research in ERTV, SABC

For the long Run.

Three trends mark the modern use of the mass media in our day. The use of mass media for international communication, the tendency to use interactive media, and the multimedia approach. The first is done by satellite and it has to do with spreading cultures to turn the world into "one big village" (McClluan's term).

The second (interactive media) somehow contradicts the mass media theory since it increases the communicative effect of the mass media for the prize of decreasing the size of the 'big village'. Because there is a limit to the number of people one (the presenter, the expert, or the broadcasting station) can deal with, and even if this line of communication is also broadcast, it can be only one-to-one communication. The contradiction is sustained with computerised mass-media, where as a result of one broadcasting computer, holders can communicate with the broadcasting station's main computer; in this case the number of two-way communication lines is increased, but still limited.

The third issue, the multimedia approach, is very close to our heart, because we already have radio, TV, teletext, satellites, computers, telephone, and the feasibility of combining the use of them in order to take advantage of the qualities of each medium to enhance our educational delivery programmes. There are pros and cons of these methods and we should research in this direction.

For the Short Run.

We should concentrate firstly on formative evaluation. Only when large-scale projects are planned, or when new methods are used, can

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we engage ourselves in summative evaluation activities (which are no longer in duration and more expensive). Even then they should be formative-oriented, with the aim of improving future projects rather than scrutinising existing situations.

The self-formative evaluation approach is recommended to be adapted for Educational Radio; accordingly teachers as well as our production staff would be involved in the evaluation development process. In this way our staff will enjoy self-improvement as well. This system implies that formative evaluation activities are integrated in the planning and development activities.

In the final stage of production, experimenting with pilot programmes should be done in a few selected cases.

Organisation and Utilisation (SABC)

The following are some quotations from Van Zyl c. (1988) evaluation report conducted by our department.

"the effective utilisation of broadcast services such as the School Radio Service does not only depend on careful planning, production and evaluation of broadcast materials, but also to a great extent on the way the service is organised and on the way the provided materials are utilised at the receiving end...

It would seem as if external factors such as timetables, the provision and upkeep of radios and the timely dissemination of information regarding the School Radio Service play a vital role in the effective utilization of radio lessons...

The undeniable deterioration in test results of the experimental group, compared with the results of the control group, is a matter of concern and should not be ignored. Follow-up research is needed to ascertain whether this phenomenon is confined to this specific small, randomly selected group, or if a deterioration in test results of pupils usually follows the absence of a teacher to attend an in-service training course such as this.

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If this deterioration in test results after teacher training in fact is a more universal phenomenon, possible causes for such deterioration should be found and real efforts made to solve the problem. (See also the research findings of interactive radio)

The contents of the training course seemed to have been in line with the main aims thereof. If courses such as these are planned for the future, however, more emphasis can be placed on practical applications and less on theoretical work. The fact that the radio cannot supplant the teacher and that the teacher, while doing all the correct things regarding the utilization of the lesson, still has a vital role to play in motivating pupils to pay close attention to facts contained in the radio lesson, may need to be stressed even more in future courses.

Recommendations Outside The Scope of the Training Course.

1. Each lesson broadcast by the School Radio Service should be in line with clear educational goals set out by decision makers on a policy-making level and teaching and subject experts on a planning level. Learning needs and learning styles of pupils should be taken into account when planning and producing such lessons for the school Radio Service. These radio lessons should also be subject to formative evaluation.

2. Provision should be made for a cassette service that supports lessons broadcast by the School Radio Service. This service should not replace the radio broadcasts that have the potential of reaching wider audiences than cassettes supplied to schools. Schools should be enabled to upgrade existing stock by exchanging radios for radios with a cassette facility, or they must be supplied with separate cassette recorders of a suitable standard.

3. Schools should be visited and informed on a more regular basis to help promote the effective utilization of radio lessons and supporting materials. Departmental newsletters, informal publications could also be used for this purpose.

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4. Supporting materials should be disseminated more effectively and perhaps on a more regular basis. They should also be made more accessible to users in the sense that some materials can be simplified and that there can be differentiation between primary schools and secondarydary schools in the packaging of materials.

5. It would seem as though taped lessons as a back-up service available to schools on request, could alleviate the problem of inadequate utilization.

Recommendations Regarding A Training Course.

The following are recommended:

1. The DET should be responsible for offering training courses regarding the utilization of school radio lessons in its schools. The SABC and other interested parties may be available for assistance, or act in an advisory capacity.

2. The ideal is that teachers rather be trained in the effective utilization of the radio in the classroom as part of their pre-service training. This courses/pamphlets should be offered to officials such as school principles and inspectors as well.

3. Apart from factual knowledge regarding how to utilise the radio and supporting materials, teachers should also be informed of pupil-related aspects such as the motivation of pupils to be active listeners to the radio lessons.

4. Changing needs and policies regarding the use of the School Radio Service should be reflected in the training courses (pre-service or in-service courses) offered in this regard. Inspectors and/or media officials may be of assistance in disseminating new information and also to support teachers when applying the newly acquired knowledge and skills.

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Recommendations Regarding Further Research

1. A strategy for school radio utilization.

   It is recommended that the decision makers concerned (DET and SABC) plan a strategy for school radio utilization which is in line with a broader educational programme, taking into account learning needs and learning styles of the potential users of the School Radio Service. Care in planning and co-operation between participants are prerequisites of successful implementation of broadcast media and research-based decision making could be of value in this regard.

2. The use of School Radio Service in Rural Areas

   In South Africa, where the provision of education for Black pupils in rural area is a matter of ongoing concern, the possibilities of the School Radio Service in this regard ought to be explored.

3. The Relation Between In-Service Training in Media utilization and Pupil Performance.

   The fact that pupil achievement in the experimental group for this research project deteriorated in comparison to the control group, is a matter of concern and reasons for this deterioration should be found. Research in this regard is recommended.

Educational Radio Target Audience

Teenagers and Young Adults

A most significant starting point for the planners and producers of educational radio programmes for teenagers and young adults is to get to know and understand their habits and attitudes and to take account of the culture and society which many meet outside school. Dominant

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elements in these daily cultural encounters are the language, (thought and imagery of the popular radio, television and printed magazine) of Dickens. Taking this into account will affect the design of programmes, their style of presentation, language, choice of speakers and use of music, sounds and actuality recordings.

It is important that pupils and older students feel the programmes are for them and are made by people who understand and respect them.

There need to be opportunities for their involvement and participation in the programmes - through discussions, phone-ins, request programmes, and recordings made with them on location, not necessarily always in school or college.

It is also important that educational radio should meet divergent needs - very able pupils want programmes that will stretch and stimulate their intellect and imagination; less demanding but no less stimulating programmes are needed for the less able and also for the handicapped and deprived.

For the producers it is important that they exploit the splendid resources of radio (and these might in the future include broadcasting in stereo) in a manner that will arrest and hold the attention of those learners in the classroom who can reject so much within formal education, and outside are devotees of 'pop' radio and culture.

Children

(The following is summarised from a BBC research.) General speaking, children listen very little to radio programmes. If radio is to reach a child audience, it must do so at times when children's television programmes are not available. Still research on the most popular children radio programmes ('4th dimension' and 'Pied Piper', BBC) showed that it was the most popular children's programmes with adults. Children themselves show a very marked preference for Radio 1 despite the fact that the vast majority of its programmes (Radio 1)

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are not primarily intended for them. The exceptions are programmes, such as 'Junior Choice' broadcast on Saturday and Sunday mornings. In this one for example, the presenter adopts a carefully non-patronising elder brother approach to his audience and great care is taken in choosing the records he plays. The programme includes tapes sent in by children. Some children's listening habits were recorded in connection with the most popular programmes.

On Saturdays the second half of the programme, from 09h00 until 09h55, was heard during the early part of last year by 17% of 5-7 year olds, 21% of 8-11's and 23% of 12-14's. For the Sunday edition of the programme, the figures for the same period are 15%, 19% and 16%. But if Radio 1 broadcasts no more than two programmes aimed specifically at children it is recognised that children form a substantial part of the total Radio 1 audience, especially at breakfast-time. During the period covered by the survey, it had audiences at 08h00 of around 12% of 5-7 year olds, 21% of 8-11 year olds, and 27% of 12-14 year olds. However, these figures dropped sharply at the time children would be leaving for school and did not rise again to anything like the same level later in the day. At weekends the breakfast-time and post breakfast-time audience (helped, no doubt, by the placing of 'Junior Choice') also contained a higher proportion of children than later in the day.

Children need to be given a chance to discover when it is (advertise the time and the channel on a way that they would know it. Children need to acquire the habit of listening to speech on radio (for any length of time).

In the BBC's experience, however the appeal of the disc jokeys for many youngsters lies in the fact that they cannot be equated with world of teachers, employers, officers and superiors. However, attempting to place too many restraints on disc jockeys or to reduce substantially the air-time they occupy would drive young people away from the network.

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'Speak-Easy', broadcast at 15h00 on Sunday afternoons, is a good example of such a programme. It has set out to stimulate interest in current topics of the day among young people and has achieved considerable success. 'Speak-Easy' has dealt with every kind of subject, from politics to cancer, from inflation to football. The programme is recorded before a participatory audience of some 500 young people each week and has included among its guests the Archbishop of Canterbury, Cabinet Ministers, trade union leaders, academicians, sportsmen and eminent people from many walks of life.

The latest important development on Radio 1 BBC is the introduction of the programme 'Newsbeat' which is broadcast twice each weekday at 12h30 and 17h30 and is aimed deliberately at young people who are considered unlikely to switch across to a Radio news programme, but who nevertheless have shown that they are interested in what is happening in the world and seek simple, facutal explanations of current topics. The programme is presented and prepared by a team of predominantly young journalists and reporters. It aims to give young people a balanced knowledge and understanding of the news in greater depth than the hourly news summaries can provide.

Younger children like to re-hear a programme they have enjoyed, possibly several times, and their enjoyment and understanding are likely to be enriched. Apparently a difficult programme heard a second time after an interval of several days will be far more readily absorbed by the younger listeners. The younger children in this age range, seven to nine, are also more willing to listen several times over to a programme they enjoyed, whereas the older ones tend to want new programmes every time.

An impression gained from observing the conditions of children writing after listening, suggests that they tend to reproduce what they have heard if they begin to write immediately after hearing poems. If their responses come later, they are more likely to be linked through talking or action with their own immediate world and their own experiences.

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Programmes should be preceded by introductory announcements. The 'warning' about the programme content should be implicit in what is said about it. It is important that listeners should not be misled. (BBC)

Present indications suggest that there will in future be growing emphasis on the needs of children as listeners to local radio, especially those in the pre-school age-group.

For the very young - infants, playgroup members and children at home - there are many series of programmes, often devised in co-operation with playgroup leaders or with local teachers. During the present school year, more than 130 teachers will be seconded to the BBC Local Radio stations to help in the production of educational programmes. The teachers have tried out pilot programmes in infant classes and reported back. Consequently, the final programmes have been produced to a tight, well thought-out brief.

Not only are children invited into the studios but every encouragement is given to them to be involved directly in shaping the programmes and in helping to make them. Many children have acquired new skills, understanding and confidence as a result.

The programmes vary from place to place, but typically they will include contributions from the children in the form of writings, songs, instrumental pieces, games and puzzles.

The experience of the BBC Children's Programmes Department is that deprived children do not like to be singled out and treated as a special audience. They are sensitive to their differences and want to conceal them, so they try to merge with everybody else. Also, the BBC has always taken the view that only someone who knows a child intimately and is thoroughly acquainted with his or her circumstances can judge what he or she can assimilate.

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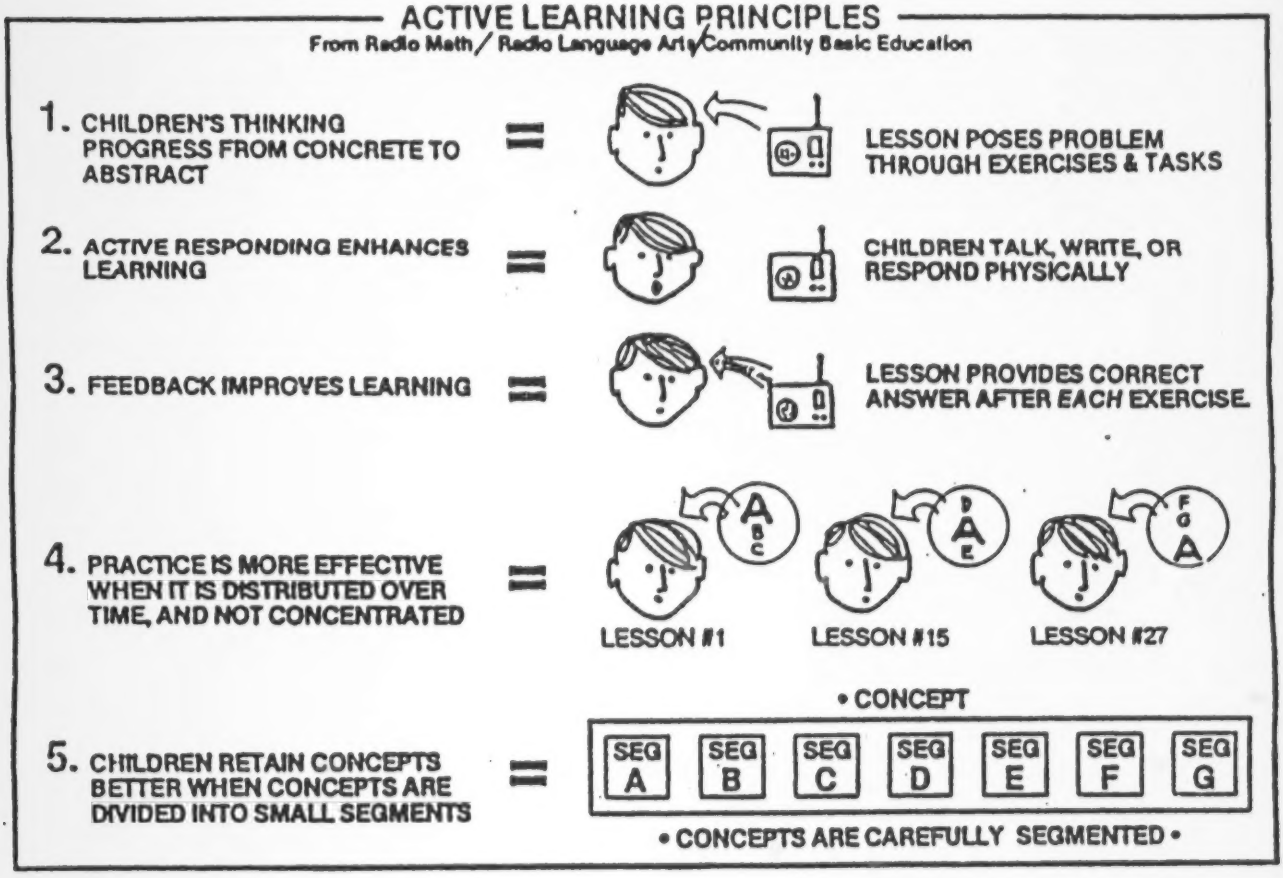
The key to achieving the potential of radio lies in a clear understanding of how children learn by radio and an ability to apply that understanding systematically. The following principles provide the foundation for a successful project. (IDCA, 1983)

Figure 3


ACTIVE LEARNING PRINCIPLES
From Radio Math / Radio Language Arts / Community Basic Education
1. CHILDREN'S THINKING PROGRESS FROM CONCRETE TO ABSTRACT
LESSON POSES PROBLEM THROUGH EXERCISES & TASKS
2. ACTIVE RESPONDING ENHANCES LEARNING
CHILDREN TALK, WRITE, OR RESPOND PHYSICALLY
3. FEEDBACK IMPROVES LEARNING
LESSON PROVIDES CORRECT ANSWER AFTER EACH EXERCISE
4. PRACTICE IS MORE EFFECTIVE WHEN IT IS DISTRIBUTED OVER TIME, AND NOT CONCENTRATED
LESSON #1
LESSON #15
LESSON #27
• CONCEPT
5. CHILDREN RETAIN CONCEPTS BETTER WHEN CONCEPTS ARE DIVIDED INTO SMALL SEGMENTS
SEG A
SEG B
SEG C
SEG D
SEG E
SEG F
SEG G
• CONCEPTS ARE CAREFULLY SEGMENTED •

The research of "East of the Sun, West of the Moon" with parents and children, revealed some issues concerning children's listening habits and the relation between the three - components children, parents and radio.

Audience research strongly suggested that people tune in to radio stations to get blocks of "service" rather than discrete, short individual programmes. Children have a short attention span.

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Children love radio, but they love it primarily as a source of rock music. Then too, changing a child's radio listening habits is only half of the battle. When the rock station is turned off, the television is often turned on.

First, there are a few models of successful contemporary radio for children; most good children's radio disappeared in the 1950's. Second, the largest adult audiences listen to radio during the traditional "children's time" in the media: early morning and late afternoon.

Infant and Primary School; The Teacher's Role (Armour, 1983)

Three phases are to be defined in using radio.

First the pre-listening preparatory phase; second the listening phase, noting in particular activities other than listening that may occur during listening; and finally the diverse situations and activities of the post-listening phases.

The aim of the preparatory phase is to arouse the children's curiosity and expectancy, and to bring them to a state of perceptual readiness to listen. On the first occasion of listening the element of novelty may be paramount; later listening will be affected by eagerness to hear another good story, to hear a familiar voice, tuneful music, or song, or to have a change from normality in the classroom to the fun, pleasure or excitement recollected from earlier listening. A bad experience of listening can have the opposite, adverse effect.

The role of the teacher is to help the children reach this state of expectation of pleasure from the programme or of curiosity about what is going on to be heard.

In fulfilling this role the teacher needs to become well-acquainted with the advance information provided through the teacher's notes for

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the broadcast series and knowing the previous learning experiences of the children, then to decide on appropriate preparation.

The physical arrangement of the classroom does have an influence on the atmosphere of the preparatory period and during listening.

Imaginitive preparation can take many forms, depending on the teacher's flair to seek and open out relevant opportunities.

For example: before leaving 'Little Grey Men', a story about gnomes, one of whom had a wooden leg fitted into an acorn cup, a teacher brought some acorn cups for the children, who were able to hold them and picture the size of the gnomes in relation to other objects. They began to listen to the story with a lively interest already aroused.

It is appropriate to emphasize that the value of talking about important and unusual words that the children are going to encounter when listening, and of writing them clearly on the board.

The teacher may also draw attention to pictures, provided either in the pamphlets accompanying the broadcast series, or collected by the teacher from other sources. Judgement is again required to know when and how to introduce the pictures so that attention is drawn.

Whether listening to a broadcast at the time of transmission or to a tape recording, the first few moments of a programme are vital; for 'Stories and Rhymes' Paddy Bechley is emphatic that music, sound effects, a striking opening sentence, or a remark by the presenter direct to the audience is needed. If attention is not caught at once it may not be caught at all. Action, for younger listeners, needs to begin quickly in a story, and the first poem, or song has to be funny, startling, very catchy or easy. (that will establish the children's goodwill.)

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S&T/ED's radio projects have effectively gained teachers' support. Teachers have come to recognise that radio provides instruction in a content area, or segment of the area, that is difficult for the teachers on their own. Radio in Thailand and Kenya has the strong support of teachers for supplementary broadcasts that bring examples, illustrations, and skills to the classroom that were not normally unavailable to the teacher. The more intensive use of radio in the Radio Math Project in Nicaragua, and later in Thailand, also gained teachers' enthusiasm because it provided quality instruction in a difficult subject. Ninety-nine percent of teachers and headmasters in Kenya have indicated their support for radio instruction through the programme.

Such enthusiasm for radio is not generated simply by offering it as an alternative delivery system. Indonesia, for example, abandoned a radio teaching programme for English language because teachers did not like it. The quality and effectiveness of the programme remained untested because it was rejected before it could be evaluated.

The process developed for teacher orientation in the Kenya project provides an effective model for ensuring teacher support. This process includes:

- Understanding the use of radio to support the teacher.
- Sufficient knowledge of the aims of the project.

Past programmes demonstrate, however, that these challenges can be met and children become involved actively in each radio lesson. Their attention is held firmly, they are better able to acquire new skills, and they are likely to retain those skills more successfully.

Distributed Learning. Psychologists have long known that skills need to be practiced regularly to be maintained effectively, and that learning spread over time (distributed learning) is more effective than learning concentrated in only one period (mass learning).

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Instructional designers, however, have generally paid only lip service to the implications of this principle. By far the most common mode of instructional organisation, whether by classroom teachers or mediated learning packages, is the 'topic' - one lesson devoted to one subject.

The challenge of instructional efficiency addressed by the S&T/ED sponsored radio projects requires the practical application of the distributed learning principle. This is one reason for the segmented script organisation adopted by both Radio Math and Radio Language Arts. Rather than devoting one programme to a single topic or objective, each programme consists of several segments, each teaching or maintaining different objectives. A given objective, on the other hand, is taught over several consecutive lessons. Then, after a period of several weeks, it is maintained over several more lessons.

In addition to improving learning, this approach enhances the ability of the radio lessons to involve pupils. The relatively short attention span of primary school children is better served by a few minutes of concentration on one topic than by an entire half-hour. Their interest can be maintained more effectively through the presentation of a variety of materials and through the quicker pace such variety promotes.

Role of parents(IDCA,1983)

The effect of parents' attitudes may surface more slowly than teachers', but they are equally important. Parents' attitudes may surface in highly charged, emotional meetings that may threaten or cancel instructional programmes.

The process to ensure parental support includes the following steps:

- Assess the perceived needs for educational change.
- Ensure that innovation is compatible with cultural and educational values.
- Demonstrate that innovation leads to improved instruction.

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The Radio Language Arts Project (see also Duby, 1982 for example) followed these steps through clearly articulated activities. Attitudes and needs were assessed during the sociolinguistics survey carried out in the early stages of the project. Cultural and educational values and the tolerance for innovation in methodology and in the use of media were monitored by the Kenyan members of the team through script and production review, through weekly observation in schools, and through discussions with headmasters and teachers. The measurement of the instructional effectiveness is the major purpose of the project's summative evaluation. Parents receive more practical feedback through the parents' committees in schools. (Anecdotal evidence from teachers and headmasters, and we hope, children, reach parents immediately.) The school committee structure was an established mechanism in Kenya.

The Teacher/Radio Partnership

The basic role of the English in Action radio lessons is to enhance the classroom teacher's effectiveness. This is accomplished by bringing into rural classrooms instructional techniques that might not otherwise be available: systematic coverage of the curriculum, a strong model of correct English, sophisticated pedagogy, maximum exposure to the target language, and lessons that can capture children's attention and motivate them.

As the pupils' English improves, it becomes neither realistic nor efficient to expect the radio to be able to teach everything. It can carry a major instructional burden, but the greater the teacher's contribution, the more the children will benefit.

This partnership between teacher and radio is an important instructional design principle for the Radio Language Arts Project. It is implemented in two ways. First, in the process of preparing the Scheme of Work for each year a careful analysis is made of every objective to determine the most efficient way to teach it. Some objectives are assigned primarily to the teacher's area of responsibility, with the radio offering support.

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Lesson plans are prepared by RLAP staff for such areas, so that these objectives can be covered systematically, too.

A good example of this is writing practice. Only two minutes out of thirty in each standard two English in Action lesson are devoted to writing. This time is used to introduce the children to new skills, on the other hand, its left to non-radio class periods under the teacher's guidance. Devoting half of the radio lesson to writing practice, with dead air in the background while children execute tasks for which the radio can give little useful feedback, would be inefficient and ineffective.

Second, teacher's notes are prepared for every radio lesson to provide teachers with a clear picture of what will be covered and how they can work effectively with the radio. These notes summarise the content of the lesson, outline the preparation required, and give specific suggestions about what the teacher should do during the broadcast. The broadcasts themselves contain guidance for the teacher whenever necessary, to supplement the most important points in the teacher's notes. The in-service training workshop emphasises how the teacher can help make the broadcasts more effective, but, more importantly, it emphasises how the radio can enhance the teachers' effectiveness.

One of the most important modifications to the Radio Math model, concern the role of the teacher. While both Radio Math and Radio Language Arts have the teacher lead post-broadcast classes using prepared lesson plans. Radio Math tried to reduce the teacher's responsibilities during the broadcast to turning on the radio and carrying out certain specified activities.

With Radio Language Arts (RLA) teachers also must perform management activities, they play an important instructional role during the radio English lessons. First, they provide mother-tongue translation when it is impossible for the radio to communicate something important purely in English. Second, they correct children when the radio

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cannot (after writing exercises, for example). (see also the SABC report)

Radio Teacher Training Programme (RTTP)*

Two main systems of the training of teachers while they are already teaching are described in Radio research literature. One is Radio broadcast programme that aims to update and perfect teachers' ability to conduct their daily task. This takes the form of radio broadcast programmes for teachers who have to cope with subjects newly introduced to the school curriculum, an example of this situation is given in the report on the Indians trial to upgrade primary school teachers to be English language teachers without pre-learning English as a subject and without having language teaching qualifications (Ahrens and Ghodiwala. 1987). One can also broadcast enrichment programmes for teachers on volatile subjects such as social and political subjects or broaden the scope of their knowledge in natural science.

The second system RAP* (Smith and Tomlinson, 1984) is more innovative; it deals with teaching skills. The features of this system are known to us from the micro teaching system. In the micro teaching system Video camera and VCR are used in a short teaching simulation situation.

In the RAP system a real class situation is recorded and real teaching problems are analysed and discussed later in a tutor - teacher trainees, face-to-face situation (Smith and Tomlinson. 1984)

A third system RTTP* is suggested here which combines the principles of the two systems, mentioned, and is more suitable to our specific situation. (SABC, ERTV)

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* RAP = Radio-Assisted Practis

*RTTP = Radio Teacher Training Programme, Duby 1988.

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a. A real teaching situation will be recorded.

b. Teaching problems will be identified afterwards and discussed by a tutor and the teacher.

c. Based on these, a structured dailogue will be written by experts.

d. As a summative activity a radio programme will be compiled, which will include selected segments from the recorded real lesson; discussion on the problems identified (by a teacher and tutor); the school recommendations for problem solving and teaching skills improvement will be given.

Advantages of RTTP.

The advantages of the suggested system are:

1. Recording in the class

It is easier to record on audio cassettes than on video-casettes because the equipment needed is simple, not expensive (if compared to video cameras etc.); no "strangers" are needed to attend the class, who would interrupt the natural flow of the lesson and cause the students and the teacher to alter their natural behaviour; children and teachers can get used to the existence of the tape-recorder in the class, and eventually ignore it and behave naturally.

Real teaching problems will be recorded in real time and real situations. Recording of many class situations will enable us to identify typical and repeated (real) problems.

We can learn more about what is really going on in our target audience classes and gear our school radio programmes to the right level. Video recording consentrates only on what the camera operator sees, whereas the audio tape records all voices and noises in the class.

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2. Teaching skills

The analysis of the class recorded tapes will also enable us to identify teaching problems that the teacher himself is not aware of (because he is preoccupied with other teaching issues.)

In general the programme will cater for issues such as classroom management, interpersonal teacher-student relations, intelligent teaching skills (such as asking questions and dealing with high cognitive skills.) (Duby, 1976)

3. Recording the tutor-teacher communication session.

This will enable us to concentrate on the teacher's problem, to understand his point of view better and consequently to cater sensitively and specifically for him.

Few stations have been willing to devote this lucrative air time to young audiences. Because of this reluctance, little market or behavioural research has been done on children's radio programming.

Does children's radio, then, stand a chance against all these obstacles? The research compiled in connection with East of the Sun, West of The Moon suggests that it does.

The adult responses support the belief that the radio listening habits of children could be altered to include quality educational programmes.

In their general comments, the parents praised the idea of radio for children. The programme's dramatisations received the most consistent praise, largely because of their ability to stimulate imagination. The interactive features of the show were also applauded, and one listener even suggested the establishment of an East of the Sun, West of the moon club to encourage participation. Parents criticised specific segments for a variety of reasons; some were difficult to hear; others were either too easy or too sophisticated; still others

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were confusing. One parent criticised a segment (an adaption of the Rilke Story "How Treason Came to Russia) because she felt that it made the Russians look bad. Many parents felt that the show contained too much explanation and was too disjointed. By far the most often repeated criticism was that a ninety-minute programme was too long.

The response to East of the Sun, West of the Moon among parents, children, and broadcasters, suggests that a major block of quality children's programming has a reasonable chance of succeeding on public radio. Parents, concerned about the deplorable state of children's entertainment, clearly would welcome a well produced, challenging and entertaining series. CAS's survey results indicate that children would also welcome such a show, but their media habits would have to be restructured in two ways. First, they would have to learn to think of radio as something more than a source of rock music. Children are accustomed to going to television for drama, comedy, and educational programmes. They would have to learn to consider radio as another source of such shows. Second, they would have to learn to listen to radio in a new way.

Entertaining, interactive series, well produced and well promoted, could bring children to the radio and engage their attention for long enough to teach them something about history, or literature or, even philosophy.

However, the consensus of all those who reviewed the programme is that the dramatised stories were the most effective segments. A radio magazine for children should have at its core a solid stock of well produced dramatisations.

Well produced pieces are essential to the success of children's radio. They are not only more enjoyable to listen to, they are also superior teaching tools because they seize and hold the audience's attention effectively. Moreover, if children's programming is to be taken seriously by stations, it must exhibit the highest production values.

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Radio Audience

Findall & Höjjer, (1977) while researching radio (news) with radio audiences in Sweden, came up with some useful generalisations.

It is important to make a distinction between the knowledge of an individual and the knowledge of the group that the individual belongs to. Most women did not differ from men as to their knowledge; most low-educated not from high-educated; and most old people not from young ones.

But at the same time there are average differences between the groups. These differences are not products of chance, but rather consequences of differences in the socio-economic characteristics of various groups in society.

These differences are particularly apparent when one compares those who know a lot with those who know little. The likelihood of belonging to a "high knowledge group" was greatest for a highly educated middle-aged man, while on the other hand the likelihood of belonging to a "low knowledge group" was greatest for an elderly woman with little formal education.

Knowledge is apparently unequally distributed in our society and this inequality seems to follow inequality of other resources. Furthermore, the study shows that those with poor general knowledge resources recalled very little of the news programme. Those with considerable general knowledge recalled more than twice as much. In that way, the knowledge gap between the groups increased after the programme exposure, despite their being equally attentive to the programme.

One or more aspects of the item content were repeated - in the form of verbal reformulations - a couple of times in the news item. The results indicate that such repetition can considerably improve receivers' ability to absorb the message. Repetition of detail is not effective, however, and emphasis should rather be laid on

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cause-and-effect relationships, which provide a framework for the various portions of the content and so aid in the listener's cognitive organisation of the material. Consequently, the communicator of a message to another person must systematically anchor the message, point for point, in the other's established view of reality. A prerequisite for successful communication is that the speaker speaks on the listener's terms, and the listener listens on the terms of the speaker.

New information cannot be received in a vacuum. This is a particularly difficult problem for the broadcast media, where technological advances have made it possible to transcend vast distances in time and space. Often uncertain whether the prerequisites for communication have been fulfilled. The reserves of knowledge relevant in this context may be of various sorts. Taking knowledge of the language spoken for granted, one may distinguish between familiarity with the terms and concepts used in the message on the one hand, and more special background knowledge, on the other e.g. knowledge of prevailing conditions, relations, relationships, usual causes and effects, etc. These types of knowledge are often interrelated.

If we are familiar with the context to which the message refers, we are generally acquainted with the terminology and concepts used to describe it.

Sometimes we may have first-hand experience of the subject of a message, but it is masked in terms and concepts unfamiliar to us. For example, scientific findings concerning everyday happenings or situations, familiar to all, are sometimes disguised in terminology or jargon so as to be recognisable only to specialists.

Or, a message may use familiar terms in a totally unfamiliar context, which may also lead to a failure to grasp the meaning of the message (one has nothing to relate the new information to.)

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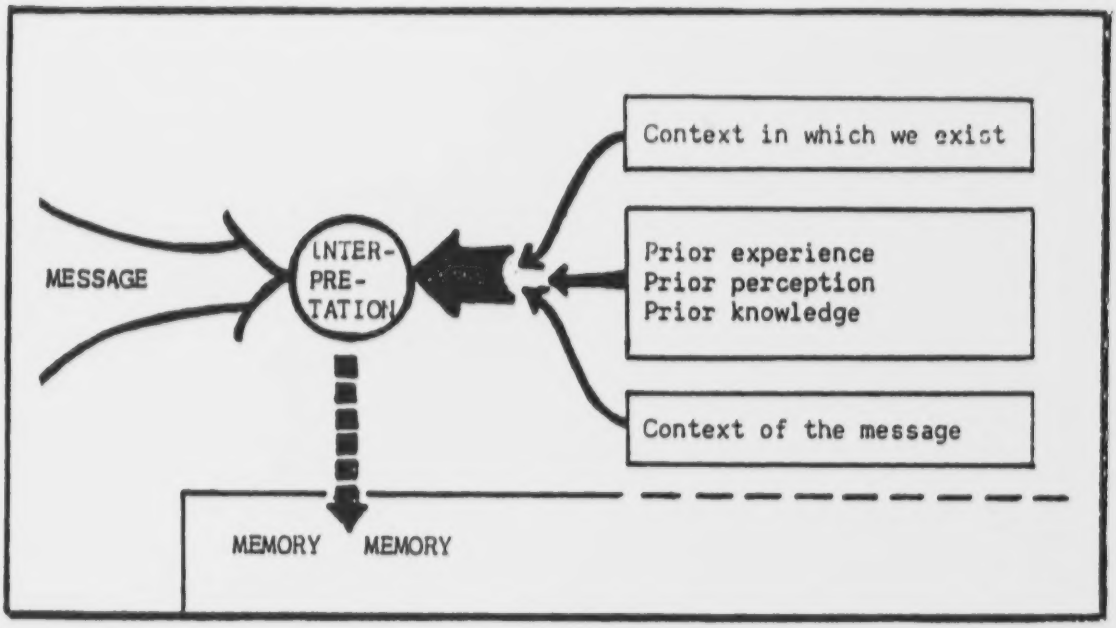
Their theory is summarised in the following figure.

Figure 4



This means that the more we know, the more new knowledge we will be able to understand and assimilate, whereas the less we know, the poorer our ability to understand and receive new information. (We are speaking here of adults. Children possess unique abilities to incorporate new knowledge, e.g. the enormous amount of knowledge involved in language-learning.)

It is interesting to see that according to their experimental research the Swedcns found that "Possession of good general knowledge reserves apparently was not guaranteed that one also absorbed more of the information communicated in the news programme. But poor knowledge reserves almost always implied that one failed to absorb very much of the programme content".

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It may be generalised that the higher the level of education, the more knowledge one possesses and the more one recalls of the programme. This holds throughout the material and for all of the subgroups; it is true of men and women; and it is true of all age-groups.

The post-broadcast children's survey suggests that few children listen on Saturday mornings: only 6 per cent of the respondents said that they would want a children's programme aired at that time. Weekday evening broadcasts probably capture larger audiences: 25 per cent of the respondents listed that time as a preference. Sunday afternoon was the time of choice for 31 per cent of the children polled. The parents' preferences roughly coincide with those of their children.

Promotion: The key to promotion is the local radio station. In any school campaign, of course, the focus cannot be exclusively on children. The children's post-broadcast survey indicated that 73 per cent of them listened to the show with their mothers; 42 per cent with their fathers.

No doubt, many parents brought their children to the radio.

Radio Classroom

Attributes of a Good Classroom (de Fossard, 1983)

The radio classroom must make effective use of the medium as well as provide an environment that facilitates learning. Attributes of any good classroom include

- Organisation
- Discipline
- Motivation
- Care and Concern

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The radio classroom must seek to provide this kind of environment. Following are some suggestions for how this can be done.

	Regular classroom	Radio classroom
1.	The teacher is in front. The children watch him/her for directions.	The radio is in front. Children focus their attention on the radio. Black-board can be beside radio if possible. Children must have a point of focus.
2.	The facilities and materials that children use are organised in shelves boxes, cupboards, etc.	Radio must provide the same type of 'classroom' organisation by creating segments marked with distinct sound.
3.	Classroom teacher requires silence while children work. Noise is seen as distracting.	The radio must provide periods of silence for work and for oral responses While it is true that normal radio programs abhor 'dead air', we must remember we are creating a class, not an entertainment. If pauses are to be long, then very soft, non-disruptive music can be used to fill them. If the same music is used in all work periods, it will not be so distracting.

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Regular classroom	Radio classroom
4. The teacher uses VISUAL cues to alert the children to what is going on. For example, while talking about using the Maths book, the teacher will hold it up.	The radio must replace visual cues with aural cues to assist children to anticipate and understand what is going on. For example - if children are required to use worksheets or exercise books, they can be given a short sound cue every time they are asked to use them.
5. The classroom uses only one teacher; sometimes assisted by an aid.	The radio should not confuse children by using too many different voices. Ideally there should be only two teachers in any one segment - so that modelling can take place and so that one teacher can give the questions; another give the answers - thus a further aural cue for the children.
6. The classroom teacher writes the on the blackboard the day, the date, and the subject being taught.	The radio must provide the same information, where possible. Sometimes it is not wise to include the day and the date because broadcast schedules have a way of changing without notice! However, children should be told clearly what subject

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		is being taught at any stage of the programme.
7.	The teacher develops a series series of commands that the children learn to follow. The teacher trains the students to respond to certain commands automatically - in order to save time and avoid confusion	The radio class must develop a of series of commands, accompanied by clear sound cues that will help the children to follow the lesson.
8.	Classroom students get to know their teacher as a person.	Radio students may be given the same opportunity to 'know' their radio teachers* even if they never see them. This can be accomplished by talking 'to' the children, rather than 'at' them, and by allowing the radio teachers to model the lesson and by involving radio teachers in songs and games rather than using commercial recordings of songs and games.
9.	The classroom teacher demonstrates the task to be performed by - writing on the blackboard - demonstrating on a worksheet.	The radio class must demonstrate (model) what it requires the children to do.

* When there is a classroom teacher present in the classroom, the radio characters who instruct should not be referred to as teachers. called by name.

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	Regular schoolroom	Radio classroom
10.	The classroom teacher works to a set cirriculum that has been devised to cover the whole year From this, the teacher creates discrete lesson plans for each day's work.	The radio lessons must work to a cirriculum that has been developed in advance. From this, there must be lesson plans for each broadcast.
11.	The good teacher follows an efficient teaching strategy: - introduce the topic - demonstrate - allow practice - give reinforcement of right answers - summarise	A good radio lesson must follow the same format.
12.	A classroom lesson is paced so that children do not get tired. Periods of relaxation are provided throughout the school day.	The radio lesson must be similarly paced, giving children time for breaks in which they have brief periods of physical activity.

Some Hints for Making the Radio into a Classroom

1. Provide an opening theme song that radio teachers and children sing together. This should be an original song created just for the programme and about the programme. (This song becomes the lesson 'entry' - rather like walking into the classroom.)

2. Greet the children. If there is more than one radio teacher, they should greet one another and greet the children. If a number of teachers will be used throughout a long programme, they can all be introduced at the beginning of the programme and

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given a collective greeting. If there is doubt about the time of day the programme will be broadcast, use a general greeting, rather than Good Morning or Good Evening.

3. Use some sort of involvement exercise EARLY in the programme, so that the attention of the students is caught at the outset. Do not spend a lot of time giving instructions to the off-air teacher or assistant. Do that within the body of the programme.

4. Use theme music to introduce each portion of the lesson, so children can anticipate what is coming and adjust their 'mind-set' to it.

5. Use sound-effects (gong, whislte, etc.) to alert children to often repeated instructions, such as 'Stand Up;' 'Sit Down;' 'Turn over your worksheets;' 'Pick up your pencils.'

6. Announce the various segments of the lesson clearly. Do not rely on the music cue alone and do not leave the children guessing about what they're supposed to be doing. Err on the side of too much instruction, rather than too little.

7. Always demonstrate (model) what the children are supposed to do.

8. Have ONE teacher in charge of each instructional segment. Use an assistant if necessary, but make it clear to the children that there is ONE voice giving the actual instructions.

9. Make all instructions clear and simple to follow. Use the same instructions every time the same behaviour is required. Where the children are required to perform an action, try to make the action verb the last word in the sentence. For example: Children, write.

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10. Where there is a sequence of instructions to be followed, establish a pattern and stick to it. Example:

    Children, look at the blackboard as your teacher writes the word ' soap'.

    Pause - 10 seconds

    - Children, read the word with me - 'soap'
    - Children, look at your worksheets.
    - Put your finger on the square with the dog.
    - You are going to write the word soap on the line in that square.
    - Children, write.

11. Where possible, have worksheets put out of the way when they're not in use. If the children do not have desks, they can be told to turn the worksheets face down - and the instruction should be followed by a sound cue. Worksheets are very distracting if the children have them visible infront of them all the time.

12. Keep the pad UP within a teaching segment. Allowing too much time also allows young minds to wander. Observe the classroom carefully to determine the length of the pauses needed for the student responses.

13. Don't be afraid to tell the children you're going to have drill practice. Drill can be an important part of radio learning. If the children know that's what it is, they will enter into it more willingly than if you don't tell them and try to motivate them, to drill in a roundabout way.

14. Create a working atmosphere during a working segment. This means order and QUIET.

15. Summarise the lesson briefly when it is over and tell the students it is over.

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16. Establish a bank of short relaxation segments - songs and games - that can be performed by children in cramped quarters. Frequently the children cannot get out of their desks or move around. These relaxation segments do not need to be more than a minute or so long. Balance learning segments with relaxation segments.

17. If you are teaching more than one subject within the radio lesson, establish different formats for the various subjects. This makes it easier for the children to identify the subject they're working on, and it also provides the variety that is necessary to maintain their interest.

18. Make sure that the children are taught to listen. Do not assume that they know how to listen. If they are not accustomed to radio and they are not accustomed to having stories told to them, it is likely they will not know how to listen attentively for a period of time. An important part of the success of any radio school depends on how well it trains its students to listen.

19. Make sure that the personality of the radio teacher is allowed to come through but without swamping the programme or taking up too much programme time. Simple greetings, modelling, and joining the children in songs and games are first steps that can be taken in this regard. Writers should attend studio recording sessions so they can gain an understanding of the character of the teachers they're writing for and allow for this in their scripts.

20. End each day's lesson in a standard fashion - perhaps with the theme song again - to indicate to the children that the day's lesson is over.

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Curriculum-development skills are obsolutely essential for the educational broadcaster. It is one thing to make an interesting radio programme; it is another matter altogether to use radio for curriculum implementation in an interesting manner.

It is now generally recognised that the most essential skill that an educational radio person should possess is the ability to translate curriculum components into effective educational broadcasting. Once upon a time the person who could use the microphone effectively was much sought after, but the present trend is to have as educational communicators two types of applications people: the person who writes curriculum material effectively from a broadcasting point of view, and the person who is able to use technology - broadcasting technology - to present the curriculum to the learner in the most exciting and interesting way possible. Radio can and should make learning a pleasurable experience.

Educators should use educational radio to do those things that it can do best. The popular but erroneous belief that radio can achieve what face-to-face communication can achieve has, however, placed false expectations on the medium.

So, Reddy (1986) concludes that for the purposes of teaching/learning, the radio is only an aid, a powerful resource. It cannot and must not be used as a replacement for the teacher. Its usefulness is maximised if it is programmed to do those things that the teacher cannot do at all, or that the teacher cannot do in an interesting manner. Radio is at its best when it is used to excite the imagination of the learner.

APPENDIX : IDEAS

RADIO EDUCATION PROGRAMMES: MSOMO WA RADIO SERIES

JANUARY - APRIL 1974.

1. The Inaugural Programme: It put emphasis on the importance and the progress being made in literacy; future radio programmes; how the teacher, as a group leader, should conduct a listening/discussion group; and the importance of group reports;

2. The Value of Literacy: The aim was to motivate, according to objective one, all those concerned in the literacy programme. Questions incorporated were: Why is it essential that illiterate persons are urged to join literacy classes? Apart from the acquisition of literacy skills, what else does an individual gain by participating in the literacy programme?

3. Functional Literacy: The difference between functional literacy and traditional literacy was discussed and emphasis put on the necessity for practical application of what has been learned from the classes. Discussion questions: Why is this literacy programme called functional? What is meant by "Learning has no end"?

4. The role of Learners and Leaders: The aim was to emphasize the role and reponsibilities of both the learners and the leaders and particularly the effective participation by the leadership. Discussion questions: What are our responsibilities as learners and What do we gain by attending regularly?

5. Drinking: Dangers (interview with a medical doctor on aspects of physical effects by alcohol) and the waste of excessive drinking were pointed out; also how drinking interferes with literacy activities and how certain classes have managed to solve this problem. Discussion questions: What are the dangers emanating from excessive drinking? If drinking is a problem in your class, what has been done to solve it?

6. The Supply and Shortage of Equipment and Material: Distribution difficulties and other problems related to supply and demand were explained. Emphasis was put on self-reliance by literacy classes. Discussion questions: What do you think are the causes for shortage of equipment and materials? When shortage occurs in your class how do you solve it?

7. Conflict between farm work and the literacy programme: The relationship between literacy and agriculture and the benefits to be gained through this integration were discussed. A stress was made for the need for a proper balance to be maintained between farm work and literacy class attendance. Discussion question: How are literacy and farm work activities related? How do demonstration plots assist in the learning of functional literacy?

8. The necessity for good relationships in the class: The need for improved mutual respect between the learners and literacy teachers was discussed. Good relationships and discipline in class were emphasized. Discussion questions: Why do you have to respect each other in the class? What do learners and teachers gain through mutual respect? What could bring about good relationship in the class?

APPENDIX : IDEAS

RADIO EDUCATION PROGRAMMES: FISONO N'A RADIO SERIES JANUARY - APRIL 1974.

1. The Inaugural Programme: It put emphasis on the importance and the progress being made in literacy; future radio programmes; how the teacher, as a group leader, should conduct a listening/discussion group; and the importance of group reports;

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9. What should be read and what is there to be read: Participants were informed about the existing books, newspapers and magazines available which they could read as well as the importance of reading in order to maintain the acquired literacy skills. The importance of utilising the existing rural libraries and rural newspapers was also discussed. Discussion Questions: What do we gain through reading books and newspapers and In your class, how do you plan to obtain books/newspapers or any other thing for reading purposes?

10. How to participate in the literacy programme: The theme was on how to budget time for various activities, an emphasis being put according to priority to literacy among other activities. Discussion Questions: Why should literacy be accorded priority and How can we budget our time properly in order to attend literacy classes?

11. Literacy and Home Economics: The discussion was about how the acquisition of literacy could be of practical value and of importance in the home life. Discussion Questions: How does the acquisition of literacy change home life? What important things do you plan to buy with your money?

12. The Role of Literacy Class Committees: The role, responsibilities, and the importance of these committees were discussed and emphasis put on how the learners can assist these committees to function properly and effectively. Discussion Questions: How can you assist your class committee to function effectively? Has your committee been a success and what problems has it solved?

13. The importance of the Swahili language: The needs and importance for the usage of Swahili language in daily life were discussed. Discussion Question: Why is it essential to learn the Swahili language?

14. Learning has no end: The emphasis was that learning was a lifelong process irrespective of age, status, education, etc. Discussion Questions: What is the age limit for learning? Why are the educated expected to go on learning?

15. This is the time: The aim was to stimulate and motivate those who had not joined the literacy programme not to wait any longer. Discussion Questions: Can we persuade our neighbours to join literacy classes? How does literacy assist in the development of our country?

16. Practical benefits from literacy: The emphasis was that participants should put into pratice what they have acquired through the literacy programme. Discussion Question: Do we apply what we have learned?

17. Questions and Answers: A resume of all the previous programmes. Discussion Questions: What have you learned from the radio programme? How would you like the future programmes to be?

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